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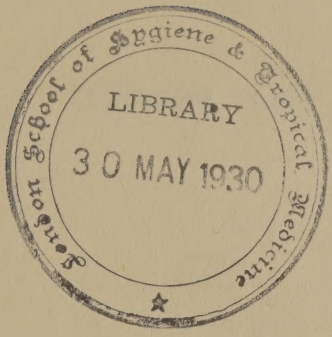
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CONTENTS.

Vol. XLVII.—Year 1884.

March, 1884.

PAGE

Statistics of the Revenue of the United Kingdom from 1859-82, in Relation to the Distribution of Taxation (in continuation of a Paper read in 1860). By Professor Leone Levi, F.S.A., LL.D., &c., &c. ..... 1— 25

Discussion on Professor Leone Levi's Paper ..... 26— 33

A Comparison of the Fluctuations in the Price of Wheat and in the Cotton and Silk Imports into Great Britain. By Professor J. H. Poynting, M.A. ..... 34— 64

Discussion on Professor Poynting's Paper ..... 65— 74

Electoral Statistics: a Review of the Working of our Representative System from 1832 to 1881, in view of Prospective Changes therein. By John Biddulph Martin, Esq., M.A. 75—115

Discussion on Mr. Martin's Paper ..... 116—124

"The Experiences and Opinions of John Howard on the Pre-
" servation and Improvement of the Health of the Inmates
" of Schools, Prisons, Workhouses, Hospitals, and other
" Public Institutions, as far as Health is affected by Struc-
" tural Arrangements relating to Supplies of Air and Water,
" Drainage, &c." By R. D. R. Sweeting, Esq., M.R.C.S., &c. ..... 125—141

Miscellanea:—

I.—Financial and Commercial History of 1883 ..... 142—150

II.—The Present Position of Spain compared with other European Countries ..... 150—163

PAGE

III.—The Rationale of Exchange. By F. Y. Edgeworth, Esq., M.A. ..... 164—166

IV.—Record of Family Faculties 166

V.—The Fires in London during 1883, and the Fire Brigade 166—170

VI.—German Literature of 1882 and 1883 171

VII.—English Literature in 1883 ..... 171—173

VIII.—The Progress of the Working Classes 174

IX.—Quarterly List of Additions to the Library ..... 175—196

Periodical Returns:—
Registrar-General's Report, and Meteorological Table for England and Wales for the Year ending 1883.—The same for Scotland.—Births, Deaths, and Marriages of the United Kingdom.—Foreign and Colonial Produce Exported, 1882-78. —Trade of the United Kingdom, 1883-82-81.—Imports and Exports.—Shipping.—Gold and Silver Bullion and Specie. —Average Prices of Corn in England and Wales.—Bank of England Returns.—Revenue Returns.—The London Clearances and Country Bank (Note) Circulation in United Kingdom.—Foreign Exchanges ..... 197—220

June, 1884.

The Recent Decline in the English Death-Rate considered in connection with the Causes of Death. By G. B. Longstaff, Esq., M.A., M.B., Oxon., M.R.C.P. ..... 221—249

Discussion on Dr. Longstaff's Paper ..... 249—258

English Express Trains in 1871; and a Comparison between them and those of 1883. By H. B. Willock, Esq., Lieut. R.E. ..... 259—299

Discussion on Lieutenant Willock's Paper, with Appendix .... 300—311

A Statistical Review of Canada, including its Confederated Provinces. By Cornelius Walford, Esq., F.I.A., Barrister-at-Law ..... 312—335

Discussion on Mr. Walford's Paper ..... 336—347

PAGE

MISCELLANEA :—

I.—The Fall in the Price of Commodities; its Cause and Effect. By PAUL LEROY-BEAULIEU. (Translated from "L'Economiste Français") ..... 348—359

II.—Lloyd's Statistics of Marine Casualties for the Year 1883 360—367

III.—Emigration and Immigration from and into the United Kingdom in the Year 1883 ..... 368—374

IV.—The Annual Local Taxation Returns (England) for the Year 1881-82 ..... 374—380

V.—Quarterly List of Additions to the Library ..... 380—394

September, 1884.

Report of the Council to the Fiftieth Anniversary Meeting of the Statistical Society, held on the 24th of June, 1884 ..... 395—408

Proceedings of the Fiftieth Anniversary Meeting ..... 409—414

"Some Statistics of Egypt." By JOSEPH RABINO, ESQ. ..... 415—459

Discussion on Mr. Rabino's Paper ..... 460—467

"The General Statistics of the British Empire." The Address of the President of Section F (Economic Science and Statistics) of the British Association at the Fifty-Fourth Meeting, held at Montreal, in August, 1884. By SIR RICHARD TEMPLE, BART., G.C.S.I., C.I.E., D.C.L., LL.D. ..... 468—484

"Media of Exchange:" being some Notes on the Precious Metals and their Equivalents. By JOHN BIDDULPH MARTIN, ESQ., M.A. ..... 485—495

MISCELLANEA :—

I.—"Immigration into the United States." By M. ARMAND LIÉGARD. (A translation) ..... 496—516

II.—"A New Industrial Inquiry." By FREDERIC HARRISON, ESQ. ..... 516—519

III.—"The Fate of the Divorced." By DR. JACQUES BERTILLON. (A translation) ..... 519—526

IV.—Catalogue of the Library of the Statistical Society ..... 526—528

V.—Quarterly List of Additions to the Library ..... 529—546

December, 1884.

PAGE

British and Foreign Colonies: the Inaugural Address of Sir Rawson W. Rawson, K.C.M.G., C.B., President of the Statistical Society, Session 1884-85. Delivered 18th November, 1884 ..... 547—605

Proceedings on the 18th November, 1884 ..... 606—608

Wine Production in France. By A. E. Bateman, Esq. ..... 609—613

On the Comparative Efficiency and Earnings of Labour at Home and Abroad. By J. S. Jeans, Esq. .... 614—655

Discussion on Mr. Jeans's Paper ..... 656—665

Miscellanea:—

I.—The Agricultural Returns for the Year 1884 ..... 666—691

II.—Savings Banks Statistics ..... 691—694

III.—Industrial Remuneration Conference 694

IV.—The approaching Celebration of the Society's Jubilee 695, 696

V.—Quarterly List of Additions to the Library ..... 696—712

Index to vol. xlvii (1884) ..... 713—733

Appendix. List of Members, Rules, &c ..... 1— 76

Vol. XLVII.] [Part I.

JOURNAL OF THE STATISTICAL SOCIETY,

MARCH, 1884.

STATISTICS *of the* REVENUE *of the* UNITED KINGDOM *from* 1859-82, *in* RELATION *to the* DISTRIBUTION *of* TAXATION (*in continuation of a* PAPER *read in* 1860).

By PROFESSOR LEONE LEVI, F.S.A., F.R.G.S., *Doctor of Political Economy of the University of Tübingen; of Lincoln's Inn, Barrister-at-Law; Cavaliere dell' Ordine di St. Maurizio e Lazzaro, and of the Crown of Italy, &c., &c.*

[Read before the Statistical Society, 18th December, 1883. The President, ROBERT GIFFEN, ESQ., LL.D., in the Chair.]

CONTENTS:

	PAGE
I.—The Science and Art of Finance	1
II.—Conclusions regarding the State of the Revenue in 1860	2
III.—Reforms in the Revenue between 1861 and 1882	3
IV.—Economic Condition of the Country in 1861-82	4
V.—Population and Finance	4
VI.—Taxation and National Income	6
VII.—Sources of the Revenue	7
VIII.—Taxation on Real and Personal Property	7
IX.—Taxation on Personal Comforts, Luxuries, and Industries	9
X.—The Taxation of Alcohol	10
XI.—The Wine Duties	13
XII.—Taxes on Sugar, Tea, and Coffee	14
XIII.—Taxes on Occupations	14
XIV.—Taxes on Inhabited Houses	15
XV.—Taxes on Insurance	16
XVI.—Taxes on the Transfer of Property	16
XVII.—Taxes on Transfer of Property by Death	17
XVIII.—Taxes on Income	18
XIX.—Incidence of Taxation on the Higher, Middle, and Working Classes	19
XX.—Appropriation of Taxation	21
XXI.—Conclusion	23
APPENDIX.	
Tables I to IV	24

I.—*The Science and Art of Finance.*

THE intimate connection of the finances of the State with the economic condition of the people, and the interest attaching to all questions concerning the administration of the national revenue, expenditure, and public debt, are, I am sure, a sufficient reason

for my resuming the consideration of such subjects before the Society from the point at which I left them some twenty years ago. The statistics of finance are the materials on which we may elaborate a science of finance, and in so far as its administration rests upon the solid principles of political economy and statistics, such materials are necessary for a wide induction of facts. The object of financial science, however, is to determine the mode of providing for the financial wants of the State, to indicate the method of satisfying such wants in the most economic and convenient manner, and to prescribe rules whereby the administration of finance shall be subject to an efficient control. And what hinders the reducing of finance to the certainty of a science is the disagreement which exists as to the proper sphere of government, a condition precedent to the ascertainment of what are the proper wants of the State. If we limit that sphere to the doing of what is required for the protection of the country and the security of the subject, the wants of the State may be ascertained with tolerable precision. But if we are prepared to extend the functions of government to anything and everything which may be, at any time, deemed beneficial to the public interest, what limits can be prescribed to the wants of the State? The greater the difficulty, however, as to the scientific basis of financial science, the more stress must be laid on the "Art" of finance, for on that depends after all the real success of the financial administration. "Art," said M. de Tracy, "consists in a series of "precepts or rules to be followed. Science consists in the know- "ledge of certain phenomena, or relation observed and ascertained. "Art counsels, prescribes, directs. Science observes, explores, "explains. Science has no immediate object in view. It is art "that applies what science has discovered." Science must determine the principles and bases of financial administration, but it is for Art to apply such principles, as far as practicable, to the peculiar exigencies of the State.

II.—*Conclusions Regarding the State of the Revenue in* 1860.

In the paper I read on the 17th January, 1860, on the distribution and productiveness of taxes, the conclusions arrived at were: That having regard to the vast and increasing resources of the United Kingdom, the amount of taxation then levied could not be considered as a hindrance to the development of national wealth; that considerable approach had been made towards the equitable distribution of taxation in the United Kingdom among all classes of society; that it did not seem expedient to alter the mode of raising the revenue by direct and indirect taxes; that it was desirable to charge customs duties upon as few articles as possible, and these the most productive to the revenue; that the remaining duties

on raw materials, and the protective duties on silk manufactures and other articles should be abolished; that it was desirable to realise as speedily as possible the contemplated reduction in the tea and sugar duties; that the wine duties should be considerably reduced; that the paper duty should be abolished; that the duties on fire and marine insurance were alike objectionable as taxes on prudence and thrift; that many of the license duties should be remitted, and that the income and property tax should be revised, with a view to the capitalisation of the income assessed under Schedules A, B, C, and E, the extension of the tax to landed property kept for enjoyment or other uses, and a reduction in the rate on incomes assessed under Schedule D, including under it the incomes obtained by skilled workmen. And in a paper also read before the Society on the 21st April, 1874, on "The Reconstruction "of the Income and Property Tax," I concluded as follows: "Without going further than is necessary for our present purpose, "I am convinced that the wisest policy to be pursued would be to "maintain and rather increase the present amount of direct taxa- "tion in a manner calculated to cover as large an area as possible, "including some section at least of the labouring population; to "keep an even balance in case of any remission as regards the "incidence of taxation on the middle and higher, as well as on the "working classes, and above all to use any surplus from year to "year for the purpose of making further conversions of the permanent debt for terminable annuities."

III.—*Reforms in the Revenue between* 1861 *and* 1882.

Within the last twenty years since the first of these papers was read, many changes have taken place in the financial administration of the country, and both political parties have held in turn the rein of the State, and it is gratifying to notice that in a large number of cases the reforms I ventured to foreshadow have been fully carried out. The taxes on butter, cheese, eggs, rice, and other articles of food, as well as the taxes on such raw materials as leather, tallow, timber, &c., were repealed in the same year, 1860. In 1861, the wine duties were reduced, and in 1863, the tea duties were also reduced. The duty on fire insurance was repealed in 1865. Many license duties were repealed in 1866, and also several assessed taxes on occupations in 1869. The sugar duties were reduced in 1870, and repealed in 1874. And in 1880 the malt duty was repealed, and in its stead a beer duty was imposed. Altogether from 1861 to 1882 the various budget estimates provided for the repeal or reduction of taxes to the extent of 41,772,000*l.*, and for the imposition or increase of taxes to the extent of 21,756,000*l.*, the rates of the income tax having meanwhile been frequently altered,

though the principle of the tax has not been greatly touched since it was reimposed in 1842 by Sir Robert Peel.

IV.—*Economic Condition of the Country in* 1861-82.

But within the last twenty years great changes have also taken place in the economic condition of the country. In 1861, the population of the United Kingdom was, in round numbers, 29,000,000; in 1882, it was 35,600,000, showing an increase of 22·27 per cent. In 1861, the total value of imports and exports was 377,000,000*l.*; in 1882 it was 719,680,000*l.*, showing an increase of 90·83 per cent. In 1861, the amount of income and property assessed to income tax was 335,654,000*l.*; in 1882, it was 585,224,000*l.*, or an increase of 74·35 per cent. In 1861, the deposits at the savings bank amounted to 41,546,000*l.*; in 1882, they were 83,651,000*l.*, being an increase of 101·34 per cent. In 1861, the number of paupers relieved, indoor and outdoor, in England and Wales, was 890,000; in 1882, it was 799,000, or a decrease of 10·22 per cent. And if we take into account the increase of population, the number of paupers, which in 1861 was 3·01 per 100, in 1882 was 2·28 per 100, showing a decrease of 24 per cent. Partly also in consequence of the substantial reforms in the mode and amount of taxation, and partly as the result of the improved condition of the people, a diminished tension has been observable for changes in the financial system. The Liverpool Financial Reform Association,* once so active and vigilant, has greatly relaxed its agitation. The movement for a free breakfast table, once so popular, has by no means been sustained. Partial efforts have been made to use the revenue as a means for the protection of British industry, but with no success. The sugar refiners urged in vain the imposition of a countervailing duty on sugar against all countries granting a bounty on their exports of sugar. The fair traders argued to no purpose in favour of the imposition of higher duties on foreign than on colonial produce, the principle being well established that taxes should be imposed not to subserve the interest of this or that industry, but for providing for the public wants of the State. Much remains to be done, doubtless, in the way of a greater diffusion of national burden, and the alleviation of charges on the transfers of property, but the main principles of fiscal policy are well settled, and there is no danger of their being upset.

V.—*Population and Finance.*

In examining the condition and progress of the revenue, it is necessary to remember that the gross amount of public revenue

* The "Financial Reform Almanack" contains statistical information of great value concerning every branch of taxation.

consists first, of the produce of taxes; second, of the receipts from the post office and telegraph services, from crown lands, and from interest on advances for local works, &c.; and third, from miscellaneous sources, such as army contributions from India, stamps in lieu of fees, &c. It is the first of these three items only which constitutes the taxation of the people, and it comprises the customs revenue, the excise revenue, the revenue from stamps, the land and assessed taxes, and the property and income tax. Comparing the total revenue and the revenue from taxes with the population of the United Kingdom, in decennial periods, since the commencement of this century, we have the following results:—

Years.	Population.	Total Gross Revenue.	Per Head.			Taxation. Customs, Excise, Stamp, Land, House, and Income Tax.	Per Head.		
		£	£	*s.*	*d.*	£	£	*s.*	*d.*
1802–10	16,700,000	54,466,000	3	5	–	52,092,000	3	2	3
'11–20	19,000,000	69,044 000	3	2	–	65,148,000	3	8	5
'21–30	22,700,000	57,962,000	2	11	–	54,677,000	2	8	1
'31–40	24,900,000	51,339,000	2	1	–	48,730,000	1	19	1
'41–50	27,400,000	55,486,000	2	–	–	52,880,000	1	18	6
1851–60	27,800,000	64,215,000	2	6	2	59,711,000	2	2	11
'61–70	29,800,000	70,625,000	2	6	2	63,415,000	2	4	–
'71–80	32,800,000	70,136,000	2	3	–	65,970,000	2	–	–
'81–83	34,900,000	86,118,000	2	9	4	70,887,000	2	0	7
'82–83	35,600,000	88,493,000	2	9	7	73,128,000	2	1	–

A considerable difference thus appears to exist between the gross revenue and the amount of taxation. Within the last three years, whilst the total gross revenue averaged 86 million pounds, the amount of taxation averaged 71 million pounds. The gross revenue from the post office and telegraph is now considerable, reaching about 9 million pounds a year, though the net revenue is only about 3 million pounds. This revenue, however, though drawn from the people, is not a tax, but a compensation for a useful service rendered by the State itself outside the range of government protection. If we except the period of the war from 1801 to 1820, and the period of transition from 1821 to 1830 we find that the average amount of taxation from 1831 to 1880 was 2*l.* –*s.* 10*d.*, and within the last three years 2*l.* –*s.* 7*d.* per head over the whole population.

A return moved by Mr. Mason, and published in 1881, of the total amount of taxes levied in each of the different States of Europe in the year 1880, distinguishing the amounts of taxes levied as direct taxation from those levied as indirect taxation, enables me to compare the taxation of different countries with that of the United Kingdom, as follows:—

Countries.	Population.	Total Gross Revenue.	Per Head.			State Taxes.	Per Head.		
		£	£	*s.*	*d.*	£	£	*s.*	*d.*
Austria-Hungary..	37,700,000	53,800,000	1	8	9	44,700,000	1	3	8
Belgium	5,500,000	17,490,000	3	3	8	6,144,000	1	2	5
Denmark.....	1,969,000	2,524,000	1	5	7	2,185,000	1	2	2
France	36,906,000	107,304,000	2	18	5	95,143,000	2	11	6
Germany.....	44,756,000	32,467,000	–	14	6	15,251,000	–	6	9
Italy	26,801,000	47,586,000	1	15	6	41,719,000	1	11	1
Netherlands	3,981,000	7,865,000	1	19	5	7,514,000	1	17	8
Portugal.....	4,522,000	5,430,000	1	4	–	5,020,000	1	2	2
Spain	16,700,000	30,334,000	1	16	3	28,497,000	1	14	1
Sweden	4,484,000	3,774,000	–	16	10	3,338,000	–	14	10
Russia.....	81,745,000	60,363,000	–	14	9	48,898,000	–	11	11
United Kingdom..	35,600,000	88,493,000	2	8	11	73,128,000	2	1	–

A bare comparison of the total gross amount of State revenue, and of the amount of taxation with population in countries so very differently situated as the above, is certainly most insufficient as an indication of their relative burden of taxation; yet it is useful to know that apart from Germany, where the imperial taxes form but a small proportion of the taxes, the highest national amount of taxation appears in republican France, and the lowest in imperial Russia; and that next to France, the countries following the order of taxation after the United Kingdom are the Netherlands, Spain, and Italy. The return of taxes in Europe, however, furnishes us the means of adding in some cases at least the amount of local or provincial taxes to the purely State taxes, and when so combined, the burden of taxation is greatly aggravated. In the United Kingdom, to the 69,814,000*l.* of State taxes in 1880-81 we must add 38,838,000*l.* of local taxes, making a total of 108,652,000*l.*, or a proportion of 3*l.* 2*s.* 8*d.* In France, to the 95,143,000*l.* of State taxes there must be added 33,400,000*l.* of local or provincial taxes, making a total of 128,543,000*l.*, or a proportion of 3*l.* 9*s.* 8*d.* per head of the inhabitants.

VI.—*Taxation and National Income.*

The amount of taxes per head is not after all the proper measure of the real burden of taxation. To arrive at this we must compare the amount with the resources of each nation, for twelve shillings per head in Russia may be more burdensome than 3*l.* per head in the United Kingdom. The people of the United Kingdom have an estimated gross annual income of about 1,000,000,000*l.* A taxation of 109,000,000*l.* upon that sum constitutes a proportion of 10·9 per cent. France has also an estimated annual income of about 1,000,000,000*l.*, and a taxation of 128,000,000*l.* constitutes a proportion of 12·8 per cent. Comparing the amount of public taxes

with the amount of national income in the United Kingdom within the last fifty years, the burden of taxation will be found to have been diminished as follows :—

Year.	National Income.	State Taxes.	Per Cent.
	£	£	
1801–10	300,000,000	67,000,000	25
'41.....	450,000,000	53,000,000	12
'61.....	600,000,000	60,000,000	10
'81.....	1,000,000,000	73,000,000	7·3

VII.—*Sources of the Revenue.*

There are in all five great branches of taxation, viz., customs, excise, stamps, land, house, and assessed taxes, and income and property tax; and their receipts were in the following proportions :—

[000's omitted in amount columns.]

Period.	Customs.	Per Cent.	Excise.	Per Cent.	Stamps.	Per Cent.	Land and House Tax.	Per Cent.	Income and Property Tax.	Per Cent.
	£		£		£		£		£	
1820–29	16,164,	29	25,077,	45	7,196,	13	6,330,	13	—	—
'30–39	20,670,	42	16,298,	34	7,219,	15	4,542,	9	—	—
'40–49	22,674,	44	14,527,	28	7,339,	13	4,473,	8	3,866,	7
'50–59	22,799,	38	17,150,	29	7,239,	12	3,424,	6	9,192,	15
1860–69	22,700,	36	19,553,	32	9,175,	14	3,418,	5	8,582,	13
'70–79	20,073,	31	26,199,	39	10,463,	16	2,524,	4	6,608,	10
'82–83	19,657,	27	26,930,	37	11,841,	16	2,800,	4	11,900,	16

Comparing the average receipts of these branches of the revenue from 1840 to 1879 with the receipts in 1882-83, we find that whilst the customs show a diminution from 37 per cent. as the average of the whole period to 27 per cent. in 1882-83, the excise show an increase from 31, the average of the whole, to 37 per cent. in 1882-83. Together these two departments yielded 68 per cent. from 1840 to 1879, and 64 per cent. for the year 1882-83. The stamp duty yielded 13 per cent. on the average of the whole period against 16 per cent. in 1882-83. And what is lost in the diminished revenue from land, house, and assessed taxes, is made up by the income and property tax.

VIII.—*Taxation on Real and Personal Property.*

Complaints have been made of the inequality of burdens on real and personal property, consequent on the large increase of local taxation which is levied wholly on real property. It is by no means an easy task to distinguish real from personal property all over the

United Kingdom, legal definitions, and the practice in this respect in England, Scotland, and Ireland differing greatly. Following the basis assumed by Mr. Goschen in his excellent report on Local Taxation, and taking his figures for 1868-69, the relative amount for 1882-83 would be as follows :—

	1868-69.	1882-83.
Falling on Real Property.	£	£
Imperial Taxes.		
Three-fourths of stamp duties on deeds....	1,190,000	1,524,000
Succession duties	724,000	822,000
Two-thirds of fire insurance duty	713,000	—
One-fourth of probate duties	172,000	376,000
Income tax on Schedule A	3,109,000	4,246,000
Land tax.....	1,117,000	1,055,000*
House tax	1,131,000	1,788,000
Local Taxation.		
Amount levied as taxes.....	20,607,000	32,307,000
	28,764,000	42,118,000
Not falling on Real Property.		
Imperial Taxes.		
Customs	22,422,000	19,657,000
Excise	20,476,000	26,930,000
Stamps less on deeds, &c.....	6,441,000	9,119,000
Income tax.....	5,515,000	7,700,000
Local Taxation.		
Tolls, &c.....	5,146,000	6,532,000
	61,238,000	69,938,000

* The land tax is in course of redemption. Up to the 31st March, 1883, the total amount redeemed and exonerated was £849,161.

Taking the entire annual value of property and profits assessed to the income tax under Schedule A and other schedules, and placing against it the proportionate amount of taxation, the following are the results :—

	Property Assessed under Schedule A.	Taxation.	Per Cent.	Property Assessed under other Schedules.	Taxation.	Per Cent.
	£	£		£	£	
1868-69	144,876,000	28,764,000	19·85	289,928,000	42,118,000	14·53
'82-83	187,600,000	42,118,000	22·45	397,626,000	69,938,000	17·33

If the taxation of real property is somewhat higher than that on personal property, it must not be forgotten that a large portion of

that taxation goes to defray expenses for the benefit of real property, and that in any case the owner of real property reimburses himself to some extent at least, and as far as he can, by increasing the rent, or otherwise levying his burden on the consumers. Mr. Prideaux Selby's proposition in the "Economist," that all permanent taxation, on whomsoever levied, forms a charge on production, and is borne by the whole community, not by any individual or class nominally paying it, is far too sweeping, for under a variety of circumstances the burden cannot be shifted, the rent of land and houses being governed by economic conditions of their own irrespective of the taxes paid by their owners. Still some portion of the burden does doubtless fall on the consumers.

It should be remembered also that the capitalised value of the incomes from real property and from personal property is widely different. The 187,600,000*l.* income assessed under Schedule A at twenty-five years' purchase will represent a capital of 4,690,000,000*l.*, and the 397,626,000*l.* assessed under all the other schedules at ten years' purchase will represent a capital of only 3,976,260,000*l.*, thus greatly altering the respective incidence of taxation.

It is urged that the area of contribution should be enlarged, that the cost of the police should be defrayed by imperial funds, that a greater amount of grants-in-aid, as for the relief of the poor, should be made by the State, or that some of the imperial taxes now locally levied, as the taxes on carriages and other license duties, should be surrendered to the local authorities. But it is not enough to show that this or that interest needs relief. To satisfy the exigencies of finance, a wider view must be taken of the entire amount of imperial and local taxation, and of its incidence on every class of the population.

Nevertheless it must be admitted that the taxes on incomes from real property are heavier by far than those on incomes from personalties. Mr. Dudley Baxter, adding the taxes on expenditure to those on incomes, calculated that while a person having his income from realty paid $15\frac{1}{2}$ per cent. of taxes, a person having an income from personalty paid $11\frac{1}{2}$ per cent., and an industrial having the same income paid only 7 per cent. This disparity is greater now than it was ten years ago, and it would be well to modify it as far as possible. Nor can we shut our eyes to the fact that an excessive taxation on land and houses has the effect of discouraging the investment of capital on the same.

IX.—*Taxation on Personal Comforts, Luxuries, and Industries.*

Another classification of taxation may be offered, which exhibits some striking features, and best indicates the character and range of the recent changes in the fiscal policy of the country. It is, as it

affects general comforts, luxuries, industries, employments, transfer of property and income, as follows in 1842, 1862, and 1882 :—

	1842.	Per Cent. of the Whole.	1862.	Per Cent. of the Whole.	1882.	Per Cent. of the Whole.
Taxes on General Comforts.	£		£		£	
Tea	3,974,000		5,517,000		3,974,000	
Sugar	5,308,000		6,383,000		—	
Coffee	888,000		439,000		190,000	
Corn	568,000		801,000		—	
Other articles and miscellaneous receipts	5,087,000		1,203,000		700,000	
	15,825,000	31·47	14,343,000	22·39	4,864,000	6·90
Taxes on Luxuries.						
Spirits, British and Foreign	7,595,000		12,268,000		18,497,000	
Beer (malt)	5,263,000		5,866,000		8,531,000	
Wine	1,720,000		1,104,000		1,366,000	
Tobacco	3,551,000		5,596,000		8,833,000	
	18,129,000	36·05	24,834,000	38·73	37,227,000	52·75
Taxes on Industries.						
Paper, hops, &c.	3,261,000	6·49	1,307,000	2·04	860,000	1·21
Taxes on Transfer of Property.						
Stamps	7,319,000	14·55	8,591,000	13·40	11,384,000	16·13
Taxes on Property.						
Land, houses, railways, &c.	4,357,000	8·67	2,074,000	3·24	2,725,000	3·86
Taxes on Employment.						
Licences	1,396,000	2·77	2,587,000	4·03	3,574,000	5·06
Taxes on Income.						
Property and income tax	—	—	10,365,000	16·17	9,948,000	14·09
	50,287,000	100·00	64,101,000	100·00	70,582,000	100·00

X.—*The Taxation of Alcohol.*

One of the most important sources of revenue, partly by customs and partly by excise duties, arises from the consumption of alcoholic drinks, viz., British and foreign spirits, beer, and wine, and also from the excise licences. Taking the consumption and revenue for the last forty-three years, the following are the results :—

[000's omitted in amount columns.]

Years.	British Spirits.			Foreign Spirits.			Beer.			Wine.		
	Quantity Consumed per Head.	Amount of Revenue	Revenue per Head.	Quantity Consumed.	Total Revenue	Per Head.	Quantity Consumed.	Total Revenue	Per Head.	Quantity Consumed.	Total Revenue	Per Head.
		£	s. d.		£	s. d.		£	s. d.		£	s. d.
1840–49	0·78	5,378,	3 11	0·14	2,402,	1 9	21 8	4,869,	3 6	0·23	1,745,	1 3
'50–59	0·86	7,696,	5 6	0·17	2,566,	1 10	23 6	5,810,	4 2	0·23	1,812,	1 3
1860–69	0·70	10,144,	6 1	0·23	3,477,	2 3	26 6	6,250,	4 2	0·39	1,321,	– 10
'70–79	0·87	14,022,	8 6	0·31	5,234,	3 2	29 9	7,458,	4 8	0·51	1,640,	– 10
'82–83	0·83	14,211,	7 11	0·24	4,365,	2 5	27 6	8,400,	4 8	0·41	1,293,	– 8

The entire revenue having been as follows :—

	Revenue from Spirits, British and Foreign. Malt and Wine.	Per Head of Inhabitants.
	£	s. d.
1840–49	14,394,000	10·5
'50–59	17,884,000	12·9
1860–69	21,192,000	13·4
'70–79	28,354,000	17·2
'82–83	28,267,000	15·8

A check has evidently been put to the continuous increase of the revenue from alcoholic beverages both absolutely and relatively to the population. This was especially the case in 1882-83, as compared with the average of the decennium from 1870 to 1879, and still more when compared with the single year 1875-76, when the revenue per head of the population from this source was 19*s.* 4*d.* What is it that principally affects this branch of the revenue? The two main resources of the country are a good harvest and a prosperous trade. Let us compare their relative influence upon the spirits revenue :—*

Years.	Revenue from Alcohol.	Result of the Harvest. Number of Bushels of Wheat per Acre.	Total Amount of British Exports.
	£		£
1861–65	19,600,000	32·0	438,460,000
'66–70	22,700,000	28·1	527,493,000
'71–75	27,400,000	24·9	657,889,000
'76–80	29,300,000	22·8	640,474,000

* See Table of Revenue from Alcohol, Result of the Harvest and Total Amount of Imports and Exports from year to year from 1861 to 1880 in the Appendix, Tables I and II.

Bad harvests clearly have no influence in diminishing the revenue from alcoholic drinks. Good harvests have not nearly so much influence in increasing it. With good harvests between 1861-65 the revenue from spirits was low. With bad harvests from 1871-75 the revenue from spirits was high. Far otherwise is it with trade. A low condition of trade is sure to depress the spirits revenue. Witness the returns of 1876-80. A high condition of trade has a favorable effect on the spirits revenue. An increasing revenue from spirits is therefore the direct result of buoyancy in the manufacturing and mining districts, and we may well assume that a portion at least of the recent diminution in the revenue from alcoholic drinks is due simply to the recent depression in commerce and industry. But doubtless the labours of our temperance societies must have had their influence in checking the excessive use of alcoholic liquors, and it is quite possible that this influence may continue to extend, for there is much room for improvement in the habits of the people in this respect. Supposing then, that the present forces engaged in the promotion of temperance should succeed in greatly diminishing, if not altogether abolishing, the use of alcoholic liquors, what economy will result to the nation, and how would it operate on the revenue? It is indeed only a speculative inquiry, but it has its uses. The present nominal expenditure in alcoholic drinks is stated to be about 120 million pounds a year, but their actual cost of production does not exceed 40 million pounds. Allowing that a fourth of the quantity now consumed should still be used for medicinal and other purposes, the economy would amount to 90 million pounds of the gross, and 30 million pounds of the net revenue per annum. If such economy were really effected, the friends of temperance anticipate that the immediate results would be a diminution of local taxation for prisons, police, poor, &c., consequent on the prevention of intemperance; a larger consumption of tea, coffee, and other more beneficial articles of food; an increase in the number of persons with incomes within the range of the income tax; and a larger amount of capital in the savings banks.

On the other hand, it should be remembered that three-fourths of the present revenue from alcoholic drinks would be lost, and would have to be levied on other industries or on income; that the profits of brewers, distillers, and licensed victuallers would suffer, and the revenue which they contribute would diminish accordingly; that large numbers of persons employed in the production and distribution of alcoholic drinks would lose their employment; and that the profits now derived from the foreign trade in the same would be in a great measure lost. Doubtless the revenue would be otherwise obtained, and capital would find its way into

other industries, but some inconvenience would result from the change. On the whole, I doubt whether the increasing revenue from the benefit of temperance would make up for the direct loss of revenue from alcoholic beverages, though the moral good arising therefrom would more than compensate for the same.

Setting aside, however, all speculative calculations of the possible result of a social reform not at present within sight, it was suggested by Mr. Stephen Bourne, in an able paper on the taxation of alcohol, read at the British Association at Southampton, that both as a means of providing for a portion of the budget enlargement, and as a moral measure for checking a serious evil, a large increase should be made, viz., of 50 per cent., or from 10*s.* to 15*s.* per gallon duty on spirits; of 33 per cent. on wine; and 50 per cent. on beer. And he estimated that supposing the consumption to continue as at present, the revenue would gain 13 million to 14 million pounds, or in the proportion of 8*s.* per head. Clearly, however, if the rise of duty should reduce the consumption, the revenue would not gain, and if the revenue would gain the interest of temperance would not be fully served. But any rise of duties, already high, would greatly encourage smuggling.

XI.—*The Wine Duties.*

Apart from the general question of the taxation of alcohol, a change is required in the mode of levying the wine duties, the minimum limit of strength at which wines are admitted at one shilling per gallon being too low to allow Spanish and Portuguese wines to compete fairly with French and other lighter wines. The British rates being prejudicial to Spanish industry, and the Spanish Government having in vain sought for a reform at the hands of the British Government, they decided on retaliating against British industry by refusing to grant to British produce and merchandise the same concessions as regards their tariff as Spain allows to countries with which she has entered into treaties of commerce. The incidence of the wine duties on the different descriptions of wine used in this country will appear in the following relation between the average strength of wine, prices, and duties.

Red Wines.

Countries.	Average Strength of Natural Wines per Cent.	Average Prices per Gallon.	Average Duty per Gallon.	Proportion of Duty to Price per Cent.
		s. *d.*	*s.* *d.*	
France	20·47	5 10	1 –	17
Portugal	24·07	6 7	2 6	37
Spain	24·18	2 4	2 4	100

According to Mr. Cartwright's return the quantities of wine imported in 1882 were as follows :—

Degree of Alcoholic Strength.	France.	Spain.	Portugal.	Italy.	Other Countries.	Total.
	Gals.	Gals.	Gals.	Gals.	Gals.	Gals.
20 to 25	3,603,045	482,191	49,483	102,880	326,410	4,463,709
26 „ 34	28,816	2,542,533	575,932	473,586	248,419	3,869,286
35 and upwards	8,882	1,876,653	2,281,610	8,478	284,669	4,460,292
	3,640,743	4,901,377	2,906,725	584,944	859,498	12,773,287

Her Majesty's Government made it known to the Spanish Government that they might be disposed to extend the application of the minimum of 1*s.* duty on wines up to 28 instead of 26 degrees of proof spirit. But the minimum limit will have to be extended to 30 degrees if it is to place Spanish wines on the same footing as French wines in the British market.

XII.—*Taxes on Sugar, Tea, and Coffee.*

Of taxes on articles of consumption other than alcoholic drinks, the principal now are those on tea and coffee, the sugar duties having been abolished in 1874-75. The reasons for the abolition of the sugar duties were partly a desire to promote what was advocated as a free breakfast table, and partly the difficulty of assessing the duties on raw sugars on an equitable basis according to their saccharine strength. As an indirect tax the sugar duties had the advantage not only of producing a large sum to the revenue, but of procuring it from all classes of society, thereby assisting the equitable distribution of taxation. The consumption and revenue from sugar, tea, and coffee have been as follows :—

Average of Ten Years.	Consumption. Sugar, lbs. per Head.	Revenue.	Consumption. Tea, lbs. per Head.	Revenue.	Consumption. Coffee, lbs. per Head.	Revenue.
		£		£		£
1840–49...	19·38	4,713,000	1·54	4,594,000	1·21	753,000
'50–59....	29·56	4,987,000	2·25	5,503,000	1·22	483,000
1860–69....	36·64	5,764,000	3·25	3,876,000	1·08	396,000
'70–79....	56·11	3,284,000	4·29	3,561,000	0·98	240,000
'80–83....	67·12	Abolished	4·61	4,023,000	0·87	203,000

XIII.—*Taxes on Occupations.*

A large number of excise and establishment licenses still disfigure the revenue system; the license duties in many cases interfering with the sale of lawful commodities, and proving otherwise an obstacle to industry. It seems, moreover, a needless

multiplication of burden, for in so far as the revenue is concerned in many cases it is exceedingly small. What purpose can it serve to levy a license duty on makers of playing cards, which produces 16*l.*; on licensed conveyancers, which produces 147*l.*; on makers and dealers of sweets, which produces 347*l.*; on vinegar makers, which produces 4,961*l.*; or on appraisers and house agents, which produces 9,652*l.*? The cost of collection of many of these duties may in some cases be in excess of the revenue obtained. The revenue from licences has been as follows :—

Year ended 5th April,	Excise Licences.	Establishment Licences and Assessed Taxes.	Total.
	£	£	£
1855	1,426,313	920,673	2,346,986
1860	1,477,602	1,085,543	2,567,145
'65	2,159,803	1,217,954	3,377,757
'70	2,577,592	1,150,717	3,728,309
'75	2,706,803	871,198	3,528,601
'80	2,764,078	775,457	3,539,535
'82–83	2,456,649	1,103,856	3,560,504

XIV.—*Taxes on Inhabited Houses.*

The inhabited house duty falls short of its natural expansion in that it affects only houses rented 20*l.* per annum and upwards, and it does not extend to Ireland. From 1808 to 1851 the inhabited house duty was levied on a graduated scale as follows: For every inhabited house of the yearly rent of 5*l.* and under 20*l.*, 1*s.* 6*d.* in the pound; of the rental of 20*l.* and under 40*l.*, 2*s.* 3*d.*; and of the rental of 40*l.* and upwards, 2*s.* 10*d.* in the pound. But upon the repeal of the window tax in 1851, the duty on inhabited houses was reimposed, but only in respect of houses of the value of 20*l.* and upwards, the rate being 6*d.* in the pound for every inhabited house if occupied for the purpose of trade, and 9*d.* if occupied in any other manner. In my paper on the "Reconstruction of the "Income and Property Tax," I suggested the extension of the inhabited house duty, commencing at 10*l.*, at 6*d.* in the pound on houses rented 10*l.* and under 20*l.*; 1*s.* on houses rented 20*l.* and under 50*l.*; 1*s.* 6*d.* on houses rented 50*l.* and under 100*l.*; and 2*s.* on houses rented at 100*l.* and upwards. And I suggested that the increasing revenue arising therefrom might go far to render it unnecessary to levy the income tax under Schedule D. Taking the return moved for by Mr. Alderman Lawrence last session* of the number of houses rented in Great Britain as a basis, the reform of the inhabited house duty in the manner suggested, leaving the

* (No. 344), Session 1883.

duty on shops as it is, and exclusive of Ireland, might be estimated to produce the following amount:—

Rental.	Dwelling Houses.	Average Rental.	Total Rental.	Rates.	Probable Revenue.
£ £	No.	£	£		£
10 and under 20	1,251,165	15	18,767,000	6*d.* in the £	468,185
20 „ 50	537,688	35	18,819,000	1*s.* „	940,970
50 „ 100	154,678	75	11,601,000	1*s.* 6*d.* „	870,063
100 and upwards	71,802	130	9,334,000	2*s.* „	934,000
	2,015,333	29	58,521,000	1*s.* 1*d.*	3,213,218
Shops, &c.	445,141	39	17,700,000	6*d.*	440,000
Total	2,460,474	31	76,221,000	11½*d.*	**3,653,218**
Inhabited house duty, 1882-83	1,111,386	51	57,658,178	7½*d.*	**1,789,000**

I forbear, however, advocating this measure at present, lest any increase of taxation in this direction might discourage the investment of capital on houses for the labouring classes, especially in London and other great centres of labour.

XV.—*Taxes on Insurance.*

The stamp duty on fire insurance, except as to the penny stamp on the policy, is abolished, but the duty on marine insurance policies remains as it was.* Insurance, whether on fire, marine, or life risks, is a measure of prudence and wisdom, and ought not to be taxed. It is, moreover, difficult to distinguish a marine from a fire risk, ships being subject to fire in docks as well as on sea. Nor is the revenue from the duty sufficiently large to make it worth maintaining the tax for the purpose. The proceeds have been as follows:—

	£		£
1855	293,388	1870	86,937
		'75	125,587
1860	325,708	'80	121,378
'65	403,199	'82-83	154,476

XVI.—*Taxes on the Transfer of Property.*

The burden which the stamp duties on the transfer of property imposes may be said to be compensated by the advantage of authenticating the transactions on which they are charged, and of rendering them less hazardous to the parties concerned. This may be said to be the effect of the receipt stamp, of the stamp on bills of exchange, and of stamps on other like instruments. It is to be

* For every 100*l.* or fraction of 100*l.* insured: upon any voyage, 3*d.*; for time, not exceeding six months, 3*d.*, not exceeding twelve months, 6*d.*

regretted, however, that the stamp duties on deeds are rather high, and recent frauds by bank agents having suggested the advantage of making personal transfer of stocks, bonds, &c., instead of making them payable to bearer, it is conceived that were the duty reduced to 5*s.* per 100*l.* the registration would be more generally adopted, and the revenue would not suffer. Doubtless there might be objection in many cases to personal transfers, whilst any process which would require labour and time might prove a hindrance to bankers in their pressing daily work. The question, however, is worthy of the attention of the Inland Revenue Commissioners. The revenue from deeds, &c., has been as follows:—

21st March,	Deeds.	Bills of Exchange.	Receipt and other 1*d.* Stamps from 1861.	Total.
	£	£	£	£
1855	1,193,673	617,658	245,368	2,056,739
'60	1,288,508	521,329	411,435	2,221,264
'65	1,653,086	779,334	519,289	2,951,709
'70	1,698,814	731,010	608,540	3,038,364
'75	2,013,937	919,309	775,591	3,708,837
'80	2,093,488	720,014	825,349	3,638,851
'82-83.....	2,053,634	765,063	923,726	3,742,423

XVII.—*Taxes on Transfer of Property by Death.*

Considerable changes have recently been made in the probate and legacy duties, which have produced a large increase of revenue. But the succession duty introduced by Mr. Gladstone in 1853 has disappointed general expectation. Has it arisen from evasion of the duty or from miscalculation? The basis of Mr. Gladstone's calculations was the gross income from land assessed to income tax, then amounting to 49 million pounds for Great Britain, or 41 million pounds net, and including Ireland, 48 million pounds. Deduct 25 per cent. for interest of mortgagees and incumbrances, the amount left was taken at 36 million pounds. Taking this amount at thirty-three years' purchase, and allowing the succession to landed estates to happen once every thirty years, it was assumed that the annual amount passing would be 36 million pounds, and that the revenue would be about half-a-million pounds. Thirty years have elapsed, and notwithstanding the great increase of wealth, the amount of property upon which duty was paid was 40 million pounds, and the proceeds of the succession duties on the year 1882-83 was 827,000*l.* Considering the enormous amount which passes yearly by probate and legacies, an impression exists that a much larger amount might be expected to pass by succession. But it is to be feared that land is mortgaged to a very large extent, and the duty is levied not in the gross, but on the net available value of the property. In a note on

Sir Stafford Northcote's observations on the subject* he said, "if an "estate worth 500,000*l.* with a net rental of 14,000*l.* were charged "with debt to the amount of 300,000*l.*, and with interest thereon of "12,000*l.*, the tax would be levied not upon the 20,000*l.* margin of "capital, but on the capitalised value of 2,000*l.* margin of income." In any case an inquiry should be instituted on the working of the succession duties. On the general question of probate, legacy, and succession duties, Mr. McCulloch in his work on taxation said, "The "circumstances of landed property being held under a settlement "and not passing by devise should not be allowed to exempt it "from a tax. Of what consequence is it to the public whether "the succession to an estate or other property be determined by a "deed of settlement entered into a century ago, or by will only a "year old, or by gift? The capacity of the property to bear taxes "cannot be affected by such considerations, and therefore if the tax "be imposed at all it should certainly be made to affect every sort "of property when it descends *mortis causâ*, or in the way of gift "from an individual to another without reference to the condition "of descent." The succession duty is levied at different rates according to the degree of affinity, but the largest portion of landed property descends by lineal succession from father to son and so successively.† The proceeds of the probate, legacy, and succession duties have been as follows :—

Years.	Probate.	Legacy.	Succession.	Total.
	£	£	£	£
1860	1,333,000	1,528,000	601,000	3,462,000
'65	1,643,000	1,784,000	563,000	3,990,000
'70	1,915,000	2,220,000	750,000	4,885,000
'75	2,298,000	2,592,000	821,000	5,711,000
'80	2,678,000	2,934,000	788,000	6,400,000
'82–83.....	3,759,000	2,715,000	822,000	7,296,000

XVIII.—*Taxes on Income.*

The property and income tax continues to offer a valuable leverage to the revenue of the country, all the more that its yield can be easily estimated. Nothing has, however, been done to remedy some of its essential defects, especially in assessing all kinds of income in the same manner regardless of their different capitalised value. It is much to be desired, moreover, that one

* See "Twenty Years of Financial Policy, 1842 to 1861," p. 207.

† The amount of property upon which succession duty was paid in the year ended 31st March, 1883, was 40,156,590*l.*, of which 27,952,795*l.*, or 69 per cent., was charged at 1 per cent. In the same year the amount upon which legacy duty was charged was 87,108,204*l.*, of which 36,740,098*l.*, or 42 per cent., was charged at 1 per cent.

unit of valuation should be established for the taxation of real property, both for the public revenue and for local taxation. In 1870, whilst the income tax assessment under Schedule A in England and Wales was 119 million pounds, the gross estimated rental was 123 million pounds, the rateable amount being 104 million pounds. In 1881-82, whilst the income tax assessment was on 154 million pounds, the gross estimated rental was 165 million pounds, the rateable value being 139,636,000*l.* Since 1860 the assessed amount of income in England and Wales, Scotland, and Ireland, has been as follows:—

Year.	England and Wales.	Scotland.	Ireland.	United Kingdom.
	£	£	£	£
1860	282,000,000	30,000,000	23,000,000	335,000,000
'70	379,000,000	40,000,000	26,000,000	445,000,000
'80	486,000,000	55,000,000	36,000,000	577,000,000
Increase per cent.	72	83	56	72

The proceeds of the tax at different periods since its imposition have been as follows:—

Year.	Total Amount.	One Penny per £.	Rate of Duty.
	£	£	
1842-43	5,341,000	772,000	7*d.* in the £
'49-50	5,559,000	782,000	„
1859-60	9,596,000	1,117,000	6½*d.* on 100*l.* and under 150*l.*, and 9*d.* on 150*l.* and upwards
'69-70	10,044,000	1,474,000	5*d.* in the £ on 100*l.* and upwards
'79-80	9,230,000	1,839,000	„ 150*l.* „
'82-83	12,404,000	1,900,000	6½*d.* „ 150*l.* „

XIX.—*Incidence of Taxation on the Higher, Middle, and Working Classes.*

I have already shown that a great reduction has been made of late years in taxes on general comforts, whilst an increasing revenue has been received from articles of luxury. Taxation does no longer cripple the consumption of articles of food; no longer restricts the import of raw materials; no longer interferes with the industries of the people. The principal amount comes from luxuries, and from sources which are no burden to anyone. But this altered method of raising a revenue has had considerable influence on the incidence of taxation on the different classes of the community. Assuming the working classes to include 70 per cent. of the population, and the middle and higher classes 30 per cent.,

the incidence of taxation among them in 1842, 1862, and 1882 respectively may be estimated as follows :—

[000's omitted.]

Taxes.	1842.			1862.			1882.		
	Total.	Middle and Higher Classes.	Working Classes.	Total.	Middle and Higher Classes.	Working Classes.	Total.	Middle and Higher Classes.	Working Classes.
	£	£	£	£	£	£	£	£	£
Sugar	5,300,	1,600,	3,700,	6,400,	1,900,	4,500,	—	—	—
Tea	3,900,	1,200,	2,700,	5,500,	1,600,	3,900,	4,000,	1,000,	3,000,
Coffee	900,	900,	—	400,	400,	—	200,	200,	—
Corn	600,	200,	400,	800,	200,	600,	—	—	—
Other imported articles	5,000,	1,700,	3,300,	1,200,	400,	800,	700,	200,	500,
Other exciseable articles	3,500,	1,000,	2,500,	1,300,	400,	900,	800,	200,	600,
Spirits	7,600	2,300,	5,300,	12,300,	3,700,	8,600,	18,400,	5,400,	13,000,
Malt	5,300,	1,600,	3,700,	5,900,	1,800,	4,100,	8,600,	2,600,	6,000,
Wine	1,700,	1,700,	—	1,100,	1,100,	—	1,400,	1,400,	—
Tobacco	3,500,	1,000,	2,500,	5,600,	1,700,	3,900,	8,800,	2,600,	6,200,
Licences	1,400,	400,	1,000,	1,600,	500,	1,100,	3,600,	1,600,	2,000,
Assessed taxes	1,300,	900,	400,	1,100,	800,	300,	—	—	—
Land and house tax	3,000,	2,500,	500,	1,900,	1,400,	500,	3,500,	3,000,	500,
Stamps	7,300,	7,300,	—	8,600,	8,600,	—	11,400,	11,400,	—
Property and income tax	—	—	—	10,400,	10,400,	—	9,900	9,900,	—
	50,200,	24,200,	26,000,	64,100,	34,900,	29,200,	71,300,	39,500,	31,800,

If we compare the number of persons of the different classes with the relative amount of public taxes without local taxes, the following are the results :—

Public Taxes.

	1842. Per Head.			1862. Per Head.			1882. Per Head.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Middle and higher classes	3	–	–	3	17	8	3	6	–
Working classes	1	7	4	1	9	–	1	5	11

But add the local taxation for the year 1882, and estimate the same to fall in the proportion of two-thirds on the middle and higher classes and one-third on the working classes, the result will be as follows :—

	Total.	Middle and Higher Classes.	Working Classes.
	£	£	£
Public taxes	71,000,000	39,500,000	31,500,000
Local „	39,000,000	26,000,000	13,000,000
	110,000,000	65,500,000	44,500,000
Per head	3*l.* 2*s.* 10*d.*	6*l.* 4*s.* 8*d.*	1*l.* 15*s.* 11*d.*

It is indeed apparent that the fiscal legislation of late years has been all in favour of the labouring classes, and that scarcely any attempt has been made to replace the taxes removed affecting them by others having an equal incidence. The improved condition of working men in respect to taxation is, however, still more remarkable when we take into account their increasing wages. In 1842 the average earning of a working man's family of four and a half persons was about 15*s.* a week, or 39*l.* a year. And upon this he had to pay 6*l.* 3*s.*, or in the proportion of about 16 per cent. In 1882 the average earning of such a family being 30*s.* a week, or 78*l.* a year, and the tax 5*l.* 16*s.*, the proportion of taxation is only about $7\frac{1}{3}$ per cent., which is again greatly diminished when the working man's family abstains from consuming either alcoholic drink or tobacco.

XX.—*Appropriation of Taxation.*

The public revenue is appropriated to payments for the interest of the public debt; for the forces, military and naval; for the civil services and civil charges; and for the collection of the revenue. Within the last twenty years, in consequence of a sounder public opinion with reference to the national debt, and also of the falling in of some terminable annuities, important progress has been made towards the reduction of the irredeemable debt by the conversion of large sums of consols into terminable annuities. The annual payment has thereby been increased, but the increase is only an investment towards an ultimate saving. Setting aside the amount appropriated to the purposes of the public debt, the expenditure capable of economy, and which reflects in a direct manner the policy of the Government for the time being consists in the civil service charges and the forces.

The Civil Service charges comprise most of the expenditure required for the internal government of the State. They provide for the maintenance of the royal palaces and public buildings; for the survey of the United Kingdom; for the maintenance of parks and pleasure gardens, museums, canals, and other public works. They meet the cost of the salaries of public servants and superannuations. They provide for stationery and printing; for the courts of justice, prisons, and constabularies; for education, science,

and art; and they supply the means for maintaining the diplomatic and consular services. Doubtless the more populous and wealthier the nation becomes, the more numerous its needs become. Some ideas of the growth of the principal branches of the civil services within the last twenty years may be formed from the following, relating to the first four classes :—

Year.	Public Buildings.	Salaries.	Law.	Education.
	£	£	£	£
1860	835,000	1,449,000	2,639,000	1,360,000
'70	1,517,000	1,862,000	4,491,000	2,367,000
'83	1,916,000	2,376,000	6,410,000	4,748,000

The payments for the forces, on the other hand, are yearly affected by measures of public policy required by fortuitous occurrences in any part of the world, partly the result of the multitude of British interests, and partly of the vast complications of diplomacy. Within the last twenty years—years of comparative peace—little wars have not been wanting. Scarcely were the wants for the Crimean war and the mutinies in India supplied, when a war occurred in New Zealand. Then came the Abyssinian war, the Ashantee war, and in succession the Russo-Turkish, the South African, the Affghan war, the wars in Europe, and recently the war in Egypt. The following is a summary of the progress of the public expenditure under the various governments since 1859-60.*

Year.	Government.	Chancellor of the Exchequer.	Civil Service and Charges.	The Forces.	Total.	Total Gross Expenditure.
			£	£	£	£
1859-60	Conservative	Mr. Disraeli	9,685,913	26,739,102	36,425,015	69,610,791
1860-61	Liberal	Mr. Gladstone	10,728,029	31,345,564	42,073,593	72,889,248
'66-67	,, ...	,,	10,523,019	25,351,641	35,874,660	66,773,489
1867-68	Conservative	Mr. Ward Hunt	11,193,758	28,587,531	39,781,289	71,229,335
'68-69	,,	,, ...	11,966,643	31,366,545	43,333,188	74,965,909
1869-70	Liberal	Mr. Gladstone	12,254,700*	24,622,690	36,877,390	68,857,845
'73-74	,, ...	,,	17,067,609	26,220,864	43,288,473	76,466,510
1874-75	Conservative	Sir S. Northcote	14,529,716	25,903,953	40,433,669	74,328,040
'79-80	,,	,,	16,923,140	29,645,870	46,569,010	83,329,021
1880-81	Liberal	Mr. Gladstone	17,356,499	26,977,687	44,334,186	82,132,075
'82-83	,, ...	,,	18,891,999	30,895,804	49,787,803	88,395,327

* Including 3,196,575*l.*, "Alabama" Claims.

* The figures for 1874-75 and succeeding ones are from the "Statistical "Abstract" from 1868 to 1882, which excluded the payments made from the army and navy extra receipts previously included.

XXI.—*Conclusion.*

Upon a revision of the statistics of the revenue and of the distribution of taxation within the last twenty years, the following conclusions may be fairly drawn :—

1. That the amount of taxation in the United Kingdom shows no material increase in the last twenty years, notwithstanding the enlargement of the revenue; a proportion of 2*l.* 1*s.* per head and of 7·3 per cent. of the estimated national income being light in relation to both population and wealth, especially when compared with the burden of taxation in other countries.
2. That although the disparity now existing between the burdens on realty and personalty is really lessened when we take into account their respective capitalised value, and still more when we bear in mind that a large proportion of local taxation is appropriated to the benefit of real property, it is not expedient by an excess of taxation to discourage the investment of capital on land and houses.
3. That recent changes in the tariff have been in the direction of diminishing the taxes on articles of personal comfort and on industries, the revenue from articles of luxury having become more productive.
4. That no reliance can be placed for purposes of revenue on the continuous growth of the produce of duties on alcoholic beverages.
5. That it seems expedient to alter the scale of the wine duties so as to admit Spanish and Portuguese wines at the lowest limit now charged of 1*s.* per gallon.
6. That the excise and establishment licence duties seem to admit of considerable simplification.
7. That the stamp duty on marine insurance policies should be remitted.
8. That an inquiry should be instituted on the working of the duties on taxes on the transfer of property, both during life and on death.
9. That the property and income tax might be more equitably levied if assessed on the capitalised value of incomes.
10. That recent changes in the nature and amount of public and local taxation have tended to diminish the burden on the working classes as compared with the middle and higher classes.

A wise administration of finances has ever been regarded of the highest importance, and it is matter of congratulation that for many years past the Chancellors of the Exchequer have had the

real luxury of presenting a fair balance of the revenue and expenditure, if not a substantial surplus. Nevertheless there are yet many abuses to be reformed; many injurious burdens to be removed; and much remains to be done towards the attainment of a fairer distribution of taxes among all classes of the community. In the present condition of the political horizon it is impossible to prognosticate what contingencies may yet arise, entailing a greater expenditure; but should the darker clouds happily dissipate and peace be maintained, ample opportunities may be afforded to the present minister of finance to grapple with many questions of admitted difficulty; to simplify the revenue system; to free the industries of the people from any unnecessary interference; and to restrict rather than enlarge the bounds of Government interference.

APPENDIX.

TABLE I.

	Production of Wheat. Bushels per Acre.	Trade. Imports and Exports.	Revenue from Alcoholic Beverages.
		£	£
1861	22⅕	377,118,000	19,204,000
'62	28¼	391,885,000	19,251,000
'63	29¼	445,821,000	18,630,000
'64	38¾	487,572,000	20,021,000
'65	35¼	489,904,000	21,192,000
'66	30⅝	534,196,000	21,770,000
'67	25⅕	500,985,000	23,276,000
'68	21	522,472,000	22,580,000
'69	34	532,475,000	22,936,000
1870	27	547,338,000	23,120,000
'71	30	614,590,000	24,445,000
'72	24	669,282,000	25,117,000
'73	24	682,292,000	27,863,000
'74	22½	667,733,000	29,513,000
'75	29¼	655,551,000	30,081,000
'76	22⅘	631,931,000	30,713,000
'77	25	646,766,000	30,420,000
'78	26½	614,254,000	30,026,000
'79	30	611,775,000	28,943,000
1880	18	697,644,000	26,438,000
'81	16	694,105,000	26,237,000
'82	27	719,680,000	28,395,000
'83	28	—	28,232,000

To face page 24.

TABLE II.

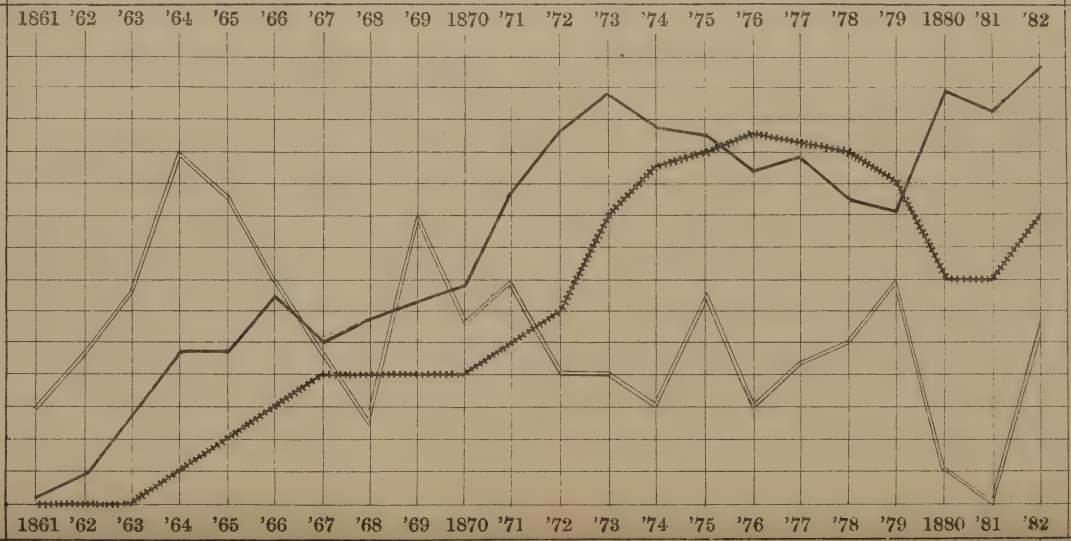
DIAGRAM

Showing Relation of the Harvest and of Commerce upon the Revenue from Alcohol.

HARVEST ═══ Bushels per Acre.

TRADE ——— Total Amount of Imports and Exports.

ALCOHOL +++++++ Revenue from Alcohol.



Millions of Pounds Sterling, Imports and Exports combined.	Number of Bushels of Wheat per Acre in England and Wales.	Total Revenue from Spirits, Beer, and Wine, in the United Kingdom, in Millions Sterling.
£	Bshls.	£
725	44	33
700	42	32
675	40	31
650	38	30
625	36	29
600	34	28
575	32	27
550	30	26
525	28	25
500	26	24
475	24	23
450	22	22
425	20	21
400	18	20
375	16	19

Total Revenue from Spirits, Beer, and Wine, in the United Kingdom, in Millions Sterling.	Number of Bushels of Wheat per Acre in England and Wales.	Millions of Pounds Sterling, Imports and Exports combined.
£	Bshls.	£
33	44	725
32	42	700
31	40	675
30	38	650
29	36	625
28	34	600
27	32	575
26	30	550
25	28	525
24	26	500
23	24	475
22	22	450
21	20	425
20	18	400
19	16	375

TABLE III.—*Produce of Taxes and Gross Revenue*, 1860-82.

[000's omitted.]

Years.	Customs.	Excise.	Stamps.	Land and Assessed Taxes.	Income Tax.	Total Taxes.	Total Gross Income.
	£	£	£	£	£	£	£
1860-61	23,306,	19,435,	8,348,	3,127,	10,924,	65,140,	70,388,
'61-62	23,674,	18,332,	8,590,	3,160,	10,365,	64,121,	69,865,
'62-63	24,034,	17,155,	8,994,	3,150,	10,567,	63,900,	70,605,
'63-64	23,232,	18,207,	9,317,	3,218,	9,084,	63,058,	70,209,
'64-65	22,572,	19,558,	9,530,	3,292,	7,958,	62,910,	70,314,
'65-66	21,276,	19,788,	9,560,	3,350,	6,390,	60,314,	67,812,
'66-67	22,303,	20,670,	9,420,	3,468,	5,700,	61,561,	69,434,
'67-68	22,650,	20,162,	9,541,	3,509,	6,177,	62,039,	69,600,
'68-69	22,424,	20,462,	9,218,	3,494,	8,618,	64,131,	72,592,
'69-70	21,529,	21,763,	9,248,	4,500,	10,044,	66,984,	75,434,
'70-71	20,191,	22,788,	9,007,	2,725,	6,350,	61,061,	62,945,
'71-72	20,326,	23,326,	9,772,	2,330,	9,084,	64,838,	74,708,
'72-73	21,033,	25,785,	9,947,	2,337,	7,500,	66,602,	76,609,
'73-74	20,339,	27,172,	10,550,	2,324,	5,691,	68,086,	77,336,
'74-75	19,289,	27,395,	10,540,	2,440,	4,306,	63,979,	74,982,
'75-76	20,020,	27,626,	11,002,	2,496,	4,109,	65,253,	77,132,
'76-77	19,922,	27,736,	10,890,	2,532,	5,280,	66,360,	78,565,
'77-78	19,969,	27,464,	10,956,	2,670,	5,820,	66,879,	79,763,
'78-79	20,316,	27,400,	10,670,	2,720,	8,710,	69,816,	83,116,
'79-80	19,326,	25,300,	11,300,	2,670,	9,230,	66,826,	81,265,
'80-81	19,184,	25,300,	11,940,	2,740,	10,650,	69,814,	84,041,
'81-82	19,287,	27,240,	12,260,	2,725,	9,945,	71,457,	85,822,
'82-83	19,657,	26,930,	11,841,	2,800,	11,900,	73,128,	88,493,

TABLE IV.—*Revenue from Principal Articles of Consumption.*

[000's omitted.]

Years.	Sugar.	Tea.	Tobacco.	Spirits, British.	Spirits, Foreign and Colonial.	Malt and Beer.	Wine.
	£	£	£	£	£	£	£
1860-61	6,067,	5,420,	5,606,	9,226,	2,624,	6,209,	1,145,
'61-62	6,383,	5,517,	5,556,	9,618,	2,649,	5,866,	1,104,
'62-63	6,428,	5,485,	5,774,	9,400,	2,703,	5,390,	1,137,
'63-64	6,159,	4,554,	5,985,	9,693,	2,993,	6,093,	1,242,
'64-65	5,252,	4,469,	6,080,	10,177,	3,303,	6,394,	1,318,
'65-66	5,228,	2,599,	6,274,	10,437,	3,505,	6,421,	1,407,
'66-67	5,648,	2,659,	6,455,	10,856,	4,173,	6,816,	1,391,
'67-68	5,582,	2,827,	6,542,	10,511,	4,298,	6,302,	1,469,
'68-69	5,504,	2,595,	6,496,	10,556,	4,331,	6,528,	1,521,
'69-70	5,397,	2,643,	6,609,	10,969,	4,191,	6 484,	1,476,
'70-71	3,218,	3,235,	6,613,	11,464,	4,419,	6,978,	1,584,
'71-72	3,179,	3,079,	6,797,	12,275,	4,524,	6,671,	1,647,
'72-73	3,284,	3,192,	7,047,	13,750,	4,882,	7,544,	1,687,
'73-74	1,843, abolished	3,248,	7,305,	14,640,	5,330,	7,754,	1,789,
'74-75	—	3,568,	7,421,	14,896,	5,719,	7,747,	1,719,
'75-76	—	3,702,	7,745,	15,164,	6,141,	7,655,	1,753,
'76-77	—	3,723,	7,776,	14,873,	5,769,	8,040,	1,738,
'77-78	—	4,002,	8,007,	15,134,	5,542,	7,772,	1,628,
'78-79	—	4,162,	8,508,	14,407,	5,332,	7,739,	1,466,
'79-80	—	3,698,	8,565,	13,632,	4,685,	6,732,	1,391,
						Malt. Beer.	
'80-81	—	3,866,	8,659,	14,394,	4,444,	2,676, 3,482,	1,376,
'81-82	—	3,974,	8,838,	14,274,	4,224,	8,531,	1,366,
'82-83	—	4,231,	8,892,	14,211,	4,365,	8,400,	1,293,

Discussion *on* Professor Leone Levi's Paper.

Mr. J. G. Rhodes said that while he felt something might be urged in favour of imposing certain taxation upon personal exertion as compared with property generally, or upon what was rather loosely called real property, his own considerations had led him to the conclusion that the soundest principle of taxation would be found in placing its incidence almost exclusively upon property. He did not think it possible in the present day to draw very useful distinctions between real and personal property. For instance, although stocks in railways were technically personal property, practically they were real property. Some few years ago having, before a local society, to consider the subject of taxation, he prepared a paper which was entitled the "Science of taxation." He endeavoured in that connection to find out what might be called the life-power of individuals, how much increase of wealth any individual during an average lifetime would bequeath to this country. Of course the amount of wealth which a man would bequeath to his country would be simply the balance between what it cost him to live and to do, and that which he created. The conclusion he arrived at was that the total amount of wealth in this country divided by the number of inhabitants, and compared with what on the average was created by an individual as the result of his life-labour, was that the average amount of wealth due to the individual *pro capite* was immensely larger than the amount which was due to an average life-labour. He also came to the conclusion that it was therefore far sounder to tax the exertions of dead men and past hours than the exertions of living men. He thought he should be borne out generally when he said that in an economic sense the user of all the property in a country was to all its inhabitants. Of course particular titular ownership of property was an entirely different matter. If then the user of property was to all its inhabitants, in taxing property they necessarily taxed in the right proportion all the people who used it. He therefore should not feel in accord with the learned professor when it was stated that there was a disadvantage in taxing houses because it would discourage the investment of capital in that particular property. With regard to the taxation relief that had been given to the labouring classes, he was of opinion that it had not gone anything like far enough; and among the labouring classes he would include all those who lived by their exertions rather than by their property. The suggestion that income should be capitalised before being taxed was of course a sound one, but his view would rather be that all incomes derived from mere personal exertion should escape entirely. The house duty as at present imposed seemed to him to be a particularly unfair one, because whatever it might have been in former times, it was no longer a necessary measure of a man's ability to pay taxes, seeing that usually men had to live in various priced houses according to the requirements

of their family. Whether, however, that were so or not, it was abundantly clear that whilst the taxable value remained the assessed rateable one, an injustice was done to the middle classes as opposed to the more wealthy and the landed classes, because these latter lived for the most part in country houses, and it was notorious that under the rating Act those houses became rated very much below what they were—in an economic sense—worth.

Mr. Lionel L. Cohen said there were two points which deserved more emphasis than had been given to them in the paper. They were the taxes on locomotion and the taxes on the transfer of property. Any person who had studied the growth of movement among the people in the last twenty years, must have felt how necessary it was that facile means of locomotion should be provided. The special facilities granted by metropolitan and urban railway companies to the working classes, however, were limited to very early hours in the morning and late hours in the evening. Perhaps it was not right to interfere without adequate compensation with the rights and privileges once accorded to railway property, but he was of opinion that whenever companies came to parliament for further extensions, a bargain should be made with them not to limit the trains at the lowest scale as they at present did. The companies might reply that their restrictions were necessary, having regard to the heavy taxation by which they were weighted; and it occurred to him that it should be considered whether the State was justified in limiting through this taxation the facility of cheap locomotion, and also whether the taxation on public conveyances should not be limited to the urban wants of each place, and be applicable to the outlay necessary in order to recoup the expenditure incurred in keeping the roads and streets in repair which were traversed by the vehicles. He believed the taxation on railways amounted to 600,000*l.* a year, and that was independent of the excise revenue from the taxation of vehicles. The next point was the taxation on the transfer of property, which was enormous, and operated as a positive check to business. The basis of the free association of capital consisted in the facility with which it could be combined for carrying out any particular industry, and transferred from one person to another. But the moment the capital of a company was registered, the State made a charge of half per cent. every time the property passed from one man to another. If the company were a popular one, and the security changed hands with great rapidity, in a very limited time more than the equivalent of the entire capital must be absorbed by the State itself. These observations also applied, but in a less degree, to the transfer of real property. He was quite satisfied that it would stimulate and foster trade if this enormous charge were reduced, and that ultimately the revenue would recover itself. Another view of the question was that the capital which was now retained in securities to bearer, and thereby often led to serious loss, was not inscribed in the form of registered securities, because in the form of floating securities it almost entirely escaped from taxation. About six years ago he made a suggestion to the then

Chancellor of the Exchequer, which, if adopted, would tend to recoup some of the loss that would be incurred by a reduction of the duty on the transfers of property. It appeared to him a most unfair incidence of taxation that while the coupon to bearer, attached to a debenture of an English, Indian, or colonial company, issued in this country, had to bear the tax of a penny stamp before it could be cashed at the Bank of England, or at any other banker, foreign bonds, the dividends of which were paid in this country, got off, in this respect, scot free, and the coupons attached to them were cashed without stamp. If a duty of a halfpenny on small amounts, and a penny on large amounts, were levied on these coupons, he believed it would realise 230,000*l.* a year.

Major Craigie said the opener of the debate had expressed a very strong opinion against anything being taxed except realised property, but in that view he was entirely at issue with the author of the paper, who was surely right in considering that all classes, propertied or unpropertied, being protected in their persons by the State, should contribute to the costs of the State. During the whole of the past twenty years, the tendency of fiscal legislation, it appeared, had been to transfer taxation from the general expenditure of the country to realised property. Concurrently with that tendency to relieve the largest class of the community from its unavoidable burdens, we have seen the power of that class in the government of the country increased and extended. It became, therefore, a very serious matter whether, in the desire of politicians to please the most numerous class, equal justice was being meted out in this respect to all classes. He wished to thank Professor Levi for the admission that there was only one taxation in the country, by whatever name it might be called, whether local or imperial, and that its incidence should be regarded as a whole. A local authority levying taxes simply did this as an agent, and with the direct sanction of the State; therefore it was not enough for one Chancellor of the Exchequer after another to parade the totals of his own account book and induce parliament to believe that they alone represented the taxation of the country. We ought to take far more notice than we do of those rapidly growing changes which the delegated agents of the State collected in the shape of local rates. He was glad that it was so clearly shown in this paper that in the interval between Mr. Goschen's exhaustive investigation into the matter in 1868-69 and the present time, so much of the entire taxation of the country as fell upon real property had increased 45 per cent., while the taxation which did not fall upon real property had only increased 15 per cent. He was sure that these figures would be heard of again before the next session of Parliament had grown very old, because it was announced that one of the matters the Chancellor of the Exchequer proposed to deal with in the coming year was redistribution of taxation between the local and the imperial accounts. The contention that one class of property ought to bear heavier burdens than another, because its capitalised value was greater, would be very difficult to carry out in practical finance. To the plausible, and at first sight taking theory,

that income should be taxed according to the nature of its permanence, the answer was that what was protected in the course of a year was simply the income of that year. The State did not concern itself with the number of hands through which that income might pass in a short time. When it ceased, the tax upon it ceased also, and the revenue which bore the tax was that protected for that year under the ægis of the State. He did not propose to do more than note the two points he had referred to, the gradually lessening taxation on the classes who were growing most in political power, and the increasing inequality in the taxation of incomes from real and personal property. But he might incidentally express a doubt if Professor Levi was right in regarding the net revenue from the Post Office, some 3 millions in amount, as in no sense taxation. Surely it was an indirect tax spread over the whole community, and ought to be taken into account as legitimately a part of the taxation of the country.

Mr. John Glover considered that the paper would be extremely useful in the important financial discussions which would shortly take place. It was gratifying to observe that the economic changes in the last twenty-five years had been to such a very large extent in the direction of simplifying all arrangements relating to revenue, making taxation more productive, and securing that a larger proportion of that which came out of the pockets of the taxpayers found its way into the exchequer. As they had got into such an excellent groove in this matter, it was to be hoped that there would be still further extensions of methods of taxation, which were no longer experiments, but had proved themselves to be sound and efficient. There were in this country three kinds of taxation, imperial, local, and departmental. This latter was quite removed from the view of parliament, and under its operation it frequently happened that considerable sums of money were accumulated and invested without anybody knowing anything about it. Professor Levi appeared to be under the impression that the Government paid the cost of lighthouses out of the general revenue of the country. He wished it were the case, and that England was sufficiently civilised and hospitable to pay for lighting her own shores; but a special tax was made on part of our shipping for that purpose, and it was levied to such an extent that it produced far more than the cost of the lighthouses. Last year the amount levied exceeded what was required by 70,000*l.* or 80,000*l.* and in the departmental fund an amount was accumulated which was approaching half a million sterling. With regard to the tax on railway passengers, he sincerely hoped that the measure of last session was only a sort of preliminary step in the way of inducing the companies to make the best possible arrangements for cheap traffic before the final abolition of the tax. It was a bad and quite unjustifiable tax which ought to be abolished. A good deal was being said just now about the tax on marine insurance. That insurance was not a luxury but a necessity, and as the tax on fire insurance had been removed, he could not see why the tax on marine insurance should continue. A great deal of marine insurance escaped the tax altogether by being

done in Hamburg, Rotterdam, Amsterdam, Paris, and other cities. Its contribution to the exchequer was too insignificant to justify its retention. He entirely agreed with Mr. Cohen in the hope that taxes on transfers of property would in a short time disappear, except in the case of deceased persons. It was absurd that one kind of stock should be taxed and another go free. It was a serious hindrance to trade, and inflicted an evil out of all proportion to any good which the revenue could possibly derive from the tax. In one sense he was sorry to see the enormous productiveness of the income tax, because it added to the difficulty of its removal.

Mr. S. Bourne said he did not think the comparison of income tax from one period to another, as given in the paper, was altogether correct, because with the increasing wealth of the country, and with very large incomes, the same income was taxed over and over again. For instance, a physician receiving large fees transmitted a sum of money to the schoolmaster, or any other person whom he might employ in various ways, and so the money became income without any further production or any further addition to the real resources of the country: and yet it was taxed more than once. He did not believe that the income of the country had at all increased to the amount represented in the table. With regard to pauperism, the fact was lost sight of that the increase of wealth caused a much larger proportion to be given in private charity, and there was also greater severity in the administration of the laws regulating paupers. The contributions of the labouring classes to sick and benefit societies were in reality a voluntary taxing of themselves to the diminution of poor rates. He did not think that the working population availed themselves of savings banks to so great an extent as was sometimes believed from the figures. A large proportion of the middle classes put their savings into those banks merely as temporary deposits. He quite agreed that local taxation should be added to the imperial taxation, and the former had become much more onerous as the latter had declined. The comparison with other countries was not altogether sound, unless the purposes were known for which the taxation of those countries was expended. In France a large proportion was absolutely employed in the making of railways: therefore the higher taxation in France might not indicate that the population were more heavily burdened, because they obtained something valuable for it. Professor Levi had instituted a comparison between the effects of bad harvests and prosperous export trade on the consumption of alcohol; but he seemed to have lost sight of the fact that bad harvests at home increased the imports from abroad, so that a large portion of the consumption of alcohol might really, though not manifestly, be affected by the bad harvests. When England was forced to buy corn from abroad, foreigners were offered inducements to take our iron, &c. In 1879, when the first spurt in the American iron trade took place, he was severely taxed by the President of the Economic Section of the British Association for saying that the iron trade was declining, and that it was only reviving because there had been a bad

harvest. England had to purchase wheat, and therefore America purchased iron. Subsequent events have proved the correctness of this surmise. Professor Levi also seemed to think that the revenue of the State would suffer if temperance advocates succeeded in inducing people to abstain from alcohol, but his (the professor's) own figures showed that whereas 120 million pounds was estimated to be spent in alcohol, the revenue derived from it was only 40 million pounds, or one-third. If the people could be persuaded to retain that money in their pockets, the Chancellor of the Exchequer would have a rich mine to dig into, and he might extract 1*l.* out of 3*l.* in some other shape or form. He (Mr. Bourne) believed he succeeded last year in proving that at least one-half of the taxation levied upon alcohol was again expended in providing for the results of the drinking of it, and he believed those were the best friends to the Chancellor of the Exchequer who tried to diminish the revenue he received from alcohol. The expenditure upon alcohol, too, really produced the least amount of consumption of labour, in proportion to its extent, of any national industry, and if the consumer had his 3*l.* to spend on something else, he would employ much more labour, and assist in raising the profits on other classes of industrial manufactures in a much larger degree. As a teetotaller he looked with regret on any reduction of duty on alcoholic liquor, but, as a matter of principle, the diminution of the Spanish wine duty was quite right as long as the duties existed in their present form. Better intercourse with Spain would be promoted, and the proposal would tend to an equalisation of the duty leviable on alcohol. At present beer was subjected to a much less amount of taxation than any other form of alcoholic drink, and the true policy would be to raise it materially. He would have preferred a levelling up rather than down. The tea duty was a fair and right one, because that article entered into the consumption of all classes of the community in some degree commensurate with their position. The taxes on transfer of property were essentially bad. Everything possible should be done to induce people to invest their money in property of which they could make use, rather than to let it be employed by other people; and the free transfer of property would tend in that direction. He would, however, like to see a much larger tax imposed upon mere transfers for speculative purposes. Stocks and shares passed through a great many hands before they came to the ultimate transferee who paid the tax. He therefore thought the taxation on those documents was extremely light.

Mr. Prideaux Selby said that any permanent taxation on whomsoever levied formed a charge on production, and was borne by the whole community, and although the rent of lands and houses was governed by economical conditions to some extent irrespective of the taxes paid by their owners, it would yet be found that the income derived from them must return to the investor in such property a similar amount as other investments, and before he could receive that revenue he must have paid the taxes which were specially levied on that property. He believed if the taxes on

spirits and tobacco were removed the rate of wages current in the country would decline. A larger proportion of the total income of the country would have to be paid by the capitalists to the Government, and they would therefore pay less in wages to the labouring classes. Therefore instead of being benefited by the abolition of such taxes, the labouring classes would ultimately have a smaller amount passing through their hands, and less opportunity for saving. A positive injury would therefore be done to the labouring classes by the abolition of those taxes, if their abolition involved the imposition of taxes on property to an equivalent amount.

Mr. C. Walford said that as the working classes had shared more largely in the general improvement of income than any other class, and had been more exempted from taxation, he thought that those who had so benefited by the fiscal policy of the last few years, should be in some measure made to contribute to the direct taxation of the country. If for instance every man who was proposed to be put on the parliamentary register by means of the forthcoming legislation could be made to pay 5*s.* or 10*s.* in the way of a house tax, the burden of taxation would be thrown upon the whole country, and not on particular sections, as was too much the case now. Such a plan would in fact conform to the principle of taxation and representation going hand in hand.

The President having left, the chair was taken by

Mr. A. H. Bailey (vice-president), who, in proposing a vote of thanks to Professor Levi, said that in the weekly returns of revenue and expenditure the income from taxation proper was confounded with other things, and it was most desirable that income from interest and mere repayments of money advanced should be omitted. Professor Levi did not seem to have a very clear idea of what in this country was meant by real and personal property, for he said that local taxation was levied wholly on real property. Real property was freehold and copyhold property, but local taxation was levied to a very large extent on the rents of leasehold houses, which except for the purposes of the succession duties Act, were personal and natural property. The professor's idea of real property seemed to be property of every description, real or personal. Then with respect to the taxation of luxuries, some persons might ask why tea was a general comfort and beer a luxury? He had reason to know that there were some popular misapprehensions as to the deposits in the savings banks. The common notion was that the depositors were people who earned weekly wages, but he had reason to know that a large proportion of these deposits belonged to children of the upper and middle classes, governesses, and domestic servants male and female, and a very small proportion to artizans. With regard to taxes on insurance, there was a slight mistake in the paper. There was still a stamp duty on every policy issued for marine, fire, and life insurance. The tax that was abolished on fire insurance was the annual payment of 3*s.* per 100*l.* He could see no reason why the tax should be

removed from marine insurance more than from any other contract on which a stamp was required. Professor Levi in his paper said, "The burden which the stamp duties on the transfer of property imposes may be said to be compensated by the advantage of authenticating the transactions on which they are charged," but as a matter of fact there was no stamp duty on the well authenticated transfers of Government 3 per cent. stocks, although there was on the transfers of railway and other stocks. In 1833, Lord Althorp, who was then Chancellor of the Exchequer, tried to impose a tax on the transfer of 3 per cent. stock, but there was such an outcry that he was obliged to abandon the attempt. With regard to the succession duty, there was no miscalculation of the value of the property on the part of Mr. Gladstone. The real reason why the tax did not produce as much as was estimated was that real estate and settled personal property passed chiefly to the family of the predecessor, and therefore the scale of duty was in the great majority of cases 1 per cent. only. He did not know where Professor Levi made the discovery that mortgages on land to the amount of 71 million pounds were held by insurance companies; as a matter of fact the mortgages that appear in the accounts of those companies were to a small extent only mortgages on land.

Professor Leone Levi in reply, acknowledged, with thanks, the suggestions thrown out in the course of the interesting discussion which had arisen upon his paper, but at that late hour he would not venture to detain the meeting with a reply.

The vote of thanks was then unanimously agreed to.

A Comparison *of the* Fluctuations *in the* Price *of* Wheat *and in the* Cotton *and* Silk Imports *into* Great Britain.

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[Read before the Statistical Society, 15th January, 1884. Sir Rawson W. Rawson, K.C.M.G., C.B., a Vice-President, in the Chair.]

CONTENTS:

	PAGE		PAGE
I.—The Method of Treating the Statistics	35	VII.—Bank-Rate	42
II.—Fluctuations in Wheat Price	37	VIII.—The Direction of Future Inquiry	42
III.—Cotton Imports	39	IX.—Note on the Process of Averaging	43
IV.—Comparison of Cotton and Wheat	40	Appendix.	
V.—Silk Imports	41	Tables I to XIX	48
VI.—Sunspots	42		

Many endeavours have lately been made to prove a connection between the variations in the activity of the sun as indicated by sunspots, and the variations in terrestrial phenomena. In some cases this connection is proved beyond doubt, but in others it is hardly as yet satisfactorily made out. To this latter class belongs the wheat harvest, the subject of probably the first investigation in this direction. As long ago as the beginning of this century Sir William Herschel remarked ("Observations tending to investigate "the Nature of the Sun," Phil. Trans., 1801) that if sunspots have an influence on the weather, then we may expect to find a connection between their appearance and the amount of the harvest as indicated by the price of wheat. He thought that statistics bore out the supposition, that in years of maximum sunspots the price of wheat is on the whole lower than in years of minimum sunspots. But further observation and investigation have shown that the connection between sunspots and the price of wheat is not so simple as Herschel supposed, even if it exists at all.

If true periodic variations are made out in the sun, we may fairly expect to find the same periods represented in whatever depends in any way on the sun; but we have no reason to suppose that we may not have other variations, periodic or non-periodic, depending on meteorological conditions, and far larger in amount. It is only necessary to compare the curves showing the variations

in sunspots and the harvest during a considerable period, to see at once that one is not a simple function of the other, but that if sunspots have any effect this is disguised by other and larger effects, some of which may be due to social or economical, others to meteorological causes. Indeed *à priori* we perhaps ought not to expect the sunspot effect to be very marked. For as far as concerns meteorology, the amount of a crop depends on the light, heat, and moisture during its growth. We do not yet know how each of these is affected by changes in sunspots, and it is quite possible that a change in one favourable to a crop, may be accompanied by an unfavourable change in another.

The attempt to prove the sunspot origin of the variations of harvests and crops, has probably led us somewhat away from the proper line of inquiry. This, it seems to me, should begin with such a manipulation of the statistics as to show the true fluctuations whatever they may be, with the effects of wars, increase of commerce, &c., as far as possible eliminated. Having obtained these fluctuations for various commodities, we can compare them with each other. If the meteorological conditions are due to extra terrestrial causes, or to terrestrial causes if they affect the whole earth, then we ought to find the fluctuations to be not merely local, but to occur nearly simultaneously in widely distant countries and in different commodities.

In this paper I have attempted to follow such a course. A method of dealing with the statistics is first described which seems to give the fluctuations freed to some extent at least from "accidental "irregularities." The results are then given of the application of the method to the price of wheat in England, France, and Bengal, taking the price as an indication of the harvest, and to the cotton and silk imports into Great Britain from various countries. Possibly the most satisfactory method of comparison would consist in a determination of any periodic variations which may exist and which are common to all. But in most cases our statistics extend over too short a time for this, and the best method available is to represent the results by curves, and to compare these together as a whole. Such a comparison, which is described in detail, does, I think, show a very close similarity in the various curves pointing probably to a common meteorological cause for the fluctuations. The results of the investigation will at once suggest the next steps in the inquiry, and these are indicated at the end of the paper.

I.—*The Method of Treating the Statistics.*

As an example of the method pursued to obtain the true fluctuations, we will take the prices of wheat in England. The list from 1582 to the present time is to be found in many works (among

others in Walford's "Famines of the World," *Journal of the Statistical Society*, 1879). From that date up to times when gazette prices are available, a record was kept by the Eton baker of the highest price of wheat at Windsor market on the market days preceding Lady Day and Michaelmas. By Professor Rogers' researches the list will probably be at least doubled in length.

As they stand the prices are not suitable for our purpose. This will at once be seen on drawing a curve whose ordinates represent the price for each year. This curve is not only so irregular that it is difficult to detect the nature of the fluctuations, but at certain periods, especially through wars, the average price rises so considerably, that what may be a very low price at a particular time may be a high price compared with the average of other times. For instance, during the four years 1804-07, the average price of wheat was 76·6 shillings per quarter. This would be a very high price for ordinary times, but was low compared with others at the beginning of the century. In order therefore to determine the fluctuations, we require to know not only the actual price, but whether that price is above or below the average *for that time*. It becomes necessary then to average the prices in some way so as to obtain a standard for each year, and we can then determine whether the price for any particular year is high or low according as it is above or below that standard. I have found it sufficient to average for ten years at a time, that is, I have taken as the standard for each year the average of the ten years of which that year is the fifth. If a curve be drawn whose ordinates represent these standard prices, it will be seen at once that all the larger irregularities are nearly smoothed down. They might be still further smoothed down by averaging the averages for say ten years at a time, but as the first process only leaves irregularities small compared with the fluctuations obtained in the way to be described directly, this is unnecessary for the present.

It may be noted that if the whole scale of prices rises, say through a long war, then the standard rises too; or if there is a gradual change through a change in the value of money, then the standard also changes. The standard will be nearly freed from any periodic changes, if such exist anywhere near ten years in period, and even changes of considerably longer or shorter period are very much lessened in their effect.

It would now be possible to represent the rises and falls in price, by comparing the price for each year with the standard for that year. But there are so many irregularities of short duration, say two or three years, that it is more convenient to take, instead of the price for each year, the average for a short period, and for this purpose I adopt four years. The price for any year then to be

compared with the standard, is the average for the four years of which that year is the second.

Were there only very small variations in the standard, it would be sufficient to take the difference between the ten-yearly and the four-yearly averages. But the standard varies very considerably even in the price of wheat, and in the case of imports of cotton and silk the change is very great indeed, through the increase in commerce. The higher the standard, the greater are the differences between it and the four-yearly average. To obtain results which may be compared with each other at different times, this effect of change of standard must be eliminated. This may be done by finding what percentage the four-yearly is of the ten-yearly average. The labour of this is not very great if a slide rule is employed, and the result is satisfactory, as will be seen on inspecting the curves given by this method and comparing them with those given by the differences.

II.—*Fluctuations in Wheat Price.*

The results of the above process applied to English wheat prices since 1760, are given in Table I, Appendix, and fig. 1 is the curve representing the fluctuations. Unfortunately there is no series of prices to be compared with that of English wheat, either for trustworthiness or length. There are, however, two other series which I have treated in the same way, and which are sufficiently long to prove a similarity in fluctuation:—one, of the price of wheat at Delhi, arranged by the late Professor Jevons, and given by him ("Nature," vol. xix, p. 588) in a paper in which he pointed out a connection between a high wheat price in Bengal and commercial crises in England, and the other of the price of French wheat from 1800 to 1850, taken from McCulloch's "Commercial Dictionary."

These are given in Tables II and III, Appendix, and the curves in figs. 2 and 3.

On comparing the curves (whose maxima I have lettered to aid comparison), it will be seen at once that *b*, *c*, *g*, *h*, *i*, and their succeeding minima correspond almost exactly in both the English and Bengal curves, that Delhi *f* follows slightly later than English *f*, and that the only break in similarity is the single Delhi maximum, where there are two English maxima *d* and *e*. The French curve corresponds still more closely, both as to maxima and minima, with the English, the only noticeable divergence being in the small maximum *i*, which is three years earlier in the French curve. It would probably be easy to obtain a long series of French prices, but I think it is hardly necessary, as the close similarity of the fluctuations to those in English wheat is beyond a doubt, and the period of comparison is taken as it were at random.

There is very little direct evidence to show that the fluctuations in the price of wheat are due to fluctuations in the harvest. It is of course a matter of common observation that if the harvest is bad the price will rise, and if the harvest is abundant the price will fall; but this is hardly satisfactory proof that all the fluctuations are due to this cause. We have reports of the quality of the harvest for many years, but they are not formed on any very definite principle, and are therefore not very trustworthy. Farmers proverbially take a depressed view of affairs, and this is illustrated by these reports. According to a table of good and bad seasons and harvests, for the forty-two years 1839-80, in "Whitaker's "Almanac" for 1882, p. 424, the harvest has been an average one twice, it has been below the average or deficient twenty-seven times, and above the average only thirteen times. But even as it stands the table gives support to the belief that the price depends mainly on the harvest. Underneath the English curve I have marked the average harvests *a*, those above the average +, and those below −. To high prices should correspond −, and to low prices +, and on the whole this is the case, the curve I think following slightly after the harvest. But we have still better evidence since 1849 in a table of Mr. Caird's (*Journal of the Statistical Society*, 1879, p. 482), of the yield per acre (see Appendix, Table IV). I have averaged his numbers for four years, and placed the curve representing the result, fig. 1*a*, under the price curve, but inverted, so that maxima represent deficient harvests. It will be seen that *m*, *n*, *o*, *p*, are all represented by the maxima on this curve, though, as is to be expected, the price curve is later than the harvest curve; for the effect of good or bad harvests lasts for some time; indeed in a paper by Messrs. Lawes and Gilbert (*Journal of the Statistical Society*, 1880, p. 326) it is stated that some of the 1863 harvest probably remained over even till 1866. The table in "Whitaker's "Almanac" quoted above affords a slight further confirmation in the amount of imports to supply home deficiencies there given. I have averaged these numbers for four years (see Appendix, Table V), and represented the results by fig. 1*b*; *k*, *l*, *n*, *o*, *p*, are all represented on this curve, the two last by a slightly greater increase in the rapidly rising rate of import. It appears then that the English fluctuations in price of wheat even lately have followed fluctuations in the harvest, and as it has at the same time been a common complaint among farmers that this has not been so much the case as formerly, I think it may be taken for granted that in general the price curve does fairly represent the variations in the harvest. We cannot prove the same in the other two cases, but it seems exceedingly improbable that the coincidence of the fluctuations is chiefly due to commercial relations between the three

countries. While for instance it is very likely that the price of wheat in England affects trade with India, and so has some effect on the price of Indian wheat, it seems impossible that this would be the chief effect, and of far greater importance than the fluctuations in the Indian harvest. We are driven then to conclude that the three series of fluctuations are all effects of one common cause, and this probably a nearly simultaneous fluctuation of the seasons, giving rise to good or bad harvests at about the same time in widely distant parts of the globe.

III.—*Cotton Imports.*

We will now examine the fluctuations in the imports of cotton. For this purpose I have taken the statistics in the article on Cotton in the "Encyclopædia Britannica," ninth edition, in which are given the amount of the imports into Great Britain from 1801 to 1876 from the East Indies, the United States, Egypt, the West Indies, and Brazil, the amount of the cotton crops in the United States, and the quantity of raw material consumed in Great Britain, this last nearly summing up the imports, or at any rate fluctuating in the same way as their sum. I have treated these statistics in the same way as those of the corn price. The actual numbers are given in the Appendix (Tables VI to XII), and the curves representing the fluctuations in figs. 4 to 10. In the cases of the cotton consumed in Great Britain, and the American imports and crop, I have not pursued the averaging method after 1861, owing to the break caused by the American war. The curves in figs. 4, 6, and 7, from 1857 onwards, represent the actual quantities.

It might perhaps be assumed, without discussion, that the imports into Great Britain fairly indicate the actual crop in each country, since we take such a large portion of the whole supply; but in the case of the United States we have a proof of this, for there the total crop is recorded since 1821, as well as the British imports. Comparing the curves, figs. 6 and 7 representing these two, it will be seen that the one follows the other very closely.

To facilitate comparison, I have lettered the maxima of the cotton consumed in Great Britain, and given the same letters to such maxima as appear to correspond in the various import curves. A careful study of these curves will show at once that there is a strong resemblance between the various fluctuations. The American war has affected the results between 1860 and 1870, the sudden falling off in the American supply causing a sudden increase in all other parts of the world, mainly due to increased area of cultivation. This gives rise to an apparent minimum about 1860, and a maximum about 1864-66, these probably coming somewhat sooner than they would have done in ordinary circumstances. Comparing the other

parts of the curves, we notice that the same maxima are repeated in most cases; those in American cotton—the chief supply throughout a great part of the time—being contemporaneous with those in cotton consumed; but in all other cases there appears to be a slight tendency on the part of the maxima to precede those in cotton consumed. The noticeable exceptions are that in East Indies, fig. 5, *i*, *j*, are represented by a single maximum—thus resembling the Bengal wheat price at the same time; and that in West Indies, fig. 9, there is one long-continued excess over average to represent *k* and *l*. The most noticeable resemblances are the occurrence of the peaked maximum *l* in all but fig. 9, of the double maximum *m*, and of the maximum in 1872-73.

IV.—*Comparison of Cotton and Wheat.*

I believe that there is a saying in Lancashire that when corn is up cotton is down. I do not know whether this is founded on anything more than common observation, but that it is true is evident from the close similarity between the curves of wheat price and cotton consumed in England, the cotton imports rising and falling with the price of corn. This similarity is so strong that every maximum and minimum in the one occurs in the other without exception. I have therefore attached the same letters to both curves. It will be noticed that generally the cotton maxima precede the wheat maxima by a year or two.

At first sight it might be supposed that the cotton consumption depended in some way on the price of wheat. But on comparing the cotton consumption with the cotton imports, we see that it is really only a summing up of these. This is seen best on comparing fig. 4, the cotton consumption, with fig. 6, the imports of American cotton, our chief supply. Now in the case of America, and probably in all the others, the imports depend on the crop, and not directly on the price of wheat. It would still be possible that the crop depended on the price of wheat in England. But if so we should expect some lagging behind of the cotton curves after the corn curve, the changes in the price of corn one year in England increasing or diminishing the demand for cotton, and so affecting the area under cultivation in the succeeding years. But comparing the American crop curve, fig. 6, with the English harvest curve, fig. 1*a*, we see that deficient English harvests coincide almost exactly with good American cotton crops, without any lagging of one behind the other. In other cases the fluctuations in the cotton crops if anything slightly precede those of the harvest in England. It is also worthy of especial notice that the two English wheat maxima *i*, *j* are represented by a single maximum in both Bengal wheat and East Indian cotton, showing apparently that these two

are more closely connected with each other than with English wheat. These considerations seem to lead us to this general conclusion :—

The American imports of cotton into Great Britain depend upon the American crop, and this is probably the case in other countries. The imports from all countries show on the whole very similar and nearly simultaneous fluctuations. Whence we may conclude that the cotton crop all over the world varies in nearly the same way at the same time. The consumption in Great Britain shows the same fluctuations, and these again appear, but slightly later, in the price of English wheat. But this last, at a slight interval, follows the English harvest, and as far as we have evidence, the English harvest nearly coincides in its fluctuations with the cotton crop, good cotton crops corresponding to bad harvests, though in some cases following a little later. The wheat price again shows similar variations in different countries, so that probably the wheat harvest varies simultaneously in those countries. Had the connection between cotton crops and harvests been merely an economical one, we should have expected cotton to follow corn fluctuations instead of either coinciding or slightly preceding. The two sets of fluctuations seem then to be due to a common meteorological cause affecting the whole globe simultaneously, and in such a way that good corn seasons are bad cotton seasons. It would be interesting to know whether this is borne out by observations in districts where both cotton and corn are grown.

V.—*Silk Imports.*

I have also treated the imports of silk in the same way. I have obtained these from Messrs. Durant's Circular (published by Darling and Son, 35, Eastcheap), which gives the imports from Italy, Brutia, Persia, Bengal, and China, from 1830 to 1881, and from Japan since 1859. The numbers are given in Tables XIII to XVIII, Appendix, and the curves representing the fluctuations in figs. 12 to 17. Fig. 17 represents the actual Japan imports, the period being too short for averaging with advantage; fig. 11 is the English wheat price curve. Comparing the silk curves together, it will be seen that there is a strong general resemblance except in the Chinese curve, fig. 16. They resemble again the wheat curve, but there is a considerable interval between the maxima. I have however, attempted to identify those which correspond, by comparing the Bengal silk with East Indian cotton, which are very much alike, and nearly simultaneous in their fluctuations, and then comparing the other silk curves with that of Bengal. On the whole the silk fluctuations are slightly before those of cotton and corn. We may especially notice the rise in 1871-72, which is simultaneous with the

rise in cotton. These favourable crops occurring all over the world, though accompanied by somewhat deficient harvests, probably assisted in producing the English prosperity of the next succeeding years.

I have not been able to find any statistics of the total produce of silk in any countries, so that I cannot make the argument so complete as in the case of cotton. But there seems to be at least a strong probability that favourable or unfavourable silk seasons occur nearly simultaneously over a very wide area, and that they slightly precede favourable or unfavourable cotton seasons.

VI.—*Sunspots.*

I have already mentioned that attempts have been made to show that sunspots affect the harvest. Fig. 19 represents the sunspot curve as given by Wolf's numbers ("Encyclopædia Britannica," "Terrestrial Magnetism," § 98). The only curve which at all resembles this is the Chinese silk curve, which is very similar. It would be interesting to compare a longer series of Chinese imports, but I have only been able to obtain the total of silk imports before 1830. Since then the proportion of Chinese silk to the total import has been steadily growing, so that now the fluctuations in the total imports nearly coincide with those in Chinese silk; but formerly our chief supply came from other countries, and we cannot use the earlier statistics as any indication of the China produce. In addition to this there were frequent changes in the protective and other duties on silk, probably interfering greatly with the natural trade. I have not thought it worth while to give the statistics for these earlier years.

VII.—*Bank-Rate.*

Though hardly bearing on the subject of the paper, I have added in fig. 18 a curve representing the variations in the bank-rate since 1840, averaged for four years at a time. This apparently resembles the wheat price curve, except that between 1860 and 1870 there is only one maximum instead of the two *n* and *o*. It may perhaps help to bear out the conclusion which the late Professor Jevons sought to establish, that commercial crises depend chiefly on the amount of raw produce.

VIII.—*The Direction of Future Inquiry.*

If the evidence which I have brought forward is held to justify the general conclusion that there are nearly simultaneous variations in the seasons over the whole earth, affecting different articles of raw produce, it will be seen that it becomes of great importance, not only in political economy but also in meteorology, to investigate these variations more closely. We have as yet only a very short

series of meteorological observations, but we have a series of wheat prices extending over several hundred years, and these, as Herschel remarked, are our only available indication of the meteorological conditions in those times. The next step is evidently therefore an investigation into any periodicities which may exist in the price of corn, and I hope at some future time to be able to give the results of such an inquiry, upon which I am now engaged.

In conclusion, I take the opportunity to express my thanks to Professor Balfour Stewart for his valuable advice during the progress of the work.

IX.—*Note on the Process of Averaging.*

Since the foregoing part of the paper was written, Professor Stokes has kindly read it. He has suggested that the numerical process employed should be further investigated to see how far the results obtained depend thereupon. I give below the mathematical examination of the method which he was kind enough to make. The following is a general description of this examination and its results, omitting the mathematical details.

According to Fourier's theorem, any quantity fluctuating irregularly with the time can be represented as made up of a definite series of terms (in general infinite in number), each of which fluctuates perfectly regularly with the time with a fixed period of its own. These terms are called simple harmonics. The height of the curve representing the original fluctuating quantity at any point is simply the algebraic sum of the heights of the curves representing the component harmonics. Perhaps an illustration from sound may make this a little clearer. Suppose that while a full band is playing, we could draw a curve to represent the pressure of the air at a given moment along a line drawn in the direction in which the sound is travelling. Such a curve would appear to fluctuate irregularly. But we know that it is really made up by the superposition of the perfectly regular waves of pressure corresponding to the separate notes sent out by all the various instruments, and a well-trained ear stationed in the line which can pick out the notes practically analyses this irregular pressure curve, that is, breaks it up into its simple harmonics. What is true of this pressure curve is true of all curves however irregularly they fluctuate, and the ear performs for the pressure curve what the mathematician seeks to perform for any other curve by Fourier's theorem.

Now when a curve is submitted to a smoothing down process such as that employed above in averaging, the harmonics which may be regarded as building it up will be altered more or less in amount or height of fluctuation or amplitude. Thus, considering

the effect on a single harmonic if we average for ten years at a time, it will be seen that a harmonic of ten years' period present in the original curve will be entirely destroyed, as in ten years it goes through all its fluctuations up and down. Harmonics longer than ten years will be more or less altered according as they exceed ten years by a smaller or greater amount, but the amplitude of all will be decreased. If we average for four years at a time, a harmonic of four years' period present in the original curve will be entirely destroyed, while those of longer periods will be lessened, though by smaller amounts the more the period exceeds four years. It might be possible then that the process employed—averaging for ten years, and then for four years, and comparing the latter average with the former—might nearly suppress most of the harmonics and bring out into prominence those having periods very near a particular value. If the various curves for wheat, cotton, &c., all had harmonic components near this value—and in irregular curves, the harmonics are very widely distributed, so that this might easily happen—the averaging process would make them appear to resemble each other even though there was no real physical connection.

It is necessary then to examine the effect of averaging to see if this will really happen—if harmonics near some particular value are brought out into especial prominence. We shall suppose in what follows that the final results are arrived at by *subtracting* the ten-yearly average from the four-yearly average, as this gives the same fluctuations, though different in amount, as the process of division which I have actually employed. The advantage of the subtraction process for our present purpose is that it allows us to deal with each harmonic term separately, and so simplifies the mathematical treatment.

Now let us consider in detail the effect of averaging on any harmonic. This may be best seen by drawing several complete fluctuations of the harmonic, and investigating the effect of replacing the ordinate at a definite point by the mean of a number of ordinates distributed at equal distances on the two sides of the point. Let us first take the ten-yearly average. If the point is at a node or place where the curve cuts the base line, we see that corresponding to every ordinate on the right there is an equal ordinate opposite in sign at an equal distance on the left, so that the mean is zero, or the average curve cuts the base line at the same point as the original harmonic curve. If the point is where the harmonic has its greatest positive amplitude, then if the harmonic has exactly a ten-year period, there will be equal positive and negative ordinates, and the mean is zero. Since this will be true in this case wherever the point is taken, the harmonic is entirely destroyed or flattened down. If the harmonic has a longer period than ten years, then

the mean of the ten ordinates on the two sides of the point with greatest amplitude will be positive, since there are more positive than negative ordinates. As the period increases, the mean will increase, until, with a very long period, it approaches equality with the original ordinate. If the harmonic is somewhat less than ten years in period, then there will be more negative than positive ordinates in the ten years about the point, and the mean will be negative and reduced. This will be true for all harmonics between ten and five years. A five years' harmonic will be included just twice in ten years, and will therefore be quite destroyed. Below five years the mean is again positive for a time, but very much reduced. Similarly at the point of greatest negative amplitude. Above ten years the mean is negative; between ten and five years positive; below five years negative again, and so on.

At intermediate points in the two halves of the original harmonic, the effect of averaging can be seen to be similar in quality to the effect at the point of greatest amplitude in the half in which the point lies, and the general result is that averaging does not alter the period of a harmonic, but replaces it by one of the same period reduced in amplitude. If the period is greater than ten years, the phase is the same, that is the average curve is positive when the original curve is positive, and negative when that is negative. If the period is ten or five years exactly, the amplitude is reduced to zero, and between these values it is much less than the original amplitude, and the phase is altered to exactly the opposite.

Similarly the effect of averaging four years at a time on harmonics having periods between two and four years, is to reduce their amplitude considerably and change the phase to the opposite. A harmonic of four years' period is entirely flattened down. Above four years the phase is the same as the original, and the amplitude approaches equality with the original amplitude as the length of period rises above four years.

Now we can represent the entire process graphically. First draw a given harmonic, which we will call Curve I. Average its ordinates ten years at a time, and draw Curve II to represent the result of this process. It will be a curve of the same period as I, but always less in amplitude, and for some harmonics opposite in phase. Now average I four years at a time, and draw Curve III to represent the result, which is also of the same period as I. Superpose III on II, and subtract the ordinates of the latter from those of the former. By drawing a curve with ordinates equal to the differences we obtain a new Curve IV, also a harmonic of the same period as the original, but always less in amplitude. If the original harmonic has a ten-year period, Curve II is a straight line, and Curve IV is simply a repetition of Curve III, which has about 0·77

of the amplitude of the original curve, as will be seen from the table below, that is 0·77 of the true harmonic is saved after the averaging. For a harmonic of period rather less than ten years Curve II is opposite in phase to Curve III, and Curve IV has therefore a slightly greater amplitude, the maximum value being at about eight years when 0·84 of the true harmonic survives. Below this the amount saved falls to 0·6 at six years and 0·25 at five years, and on the other side it falls to 0·45 at sixteen years.

Thus the effect of the averaging process is practically to destroy all harmonics below five years, to save over half the amplitude at six years, a greater amount up to eight years, when about five-sixths is saved, and beyond that a continually decreasing amount, though at fifteen years still nearly one half is saved. This wide range of periods thus to a large extent surviving the process seems to show that the fluctuations in the wheat and other curves do not arise merely from that process, but are fluctuations occurring in reality. But this is perhaps best shown by taking two entirely different numbers. I have adopted 15 and 6, at Professor Stokes's suggestion, taking the means of the former to correspond to the latter in time.

I give in Figs. 20 and 21 the results of these processes for English wheat price; Fig. 20 representing the difference between the four-yearly average and the ten-yearly average; Fig. 21, the difference between the six-yearly average and the means of the fifteen-yearly average. A comparison of the two will show that nearly all the chief fluctuations appear in each.

That the fluctuations are real seems to be further indicated by the fact that the members of each of the three groups, corn, cotton, and silk, resemble the other members of their own group much more closely in general than they resemble the members of any other group. Were the fluctuations merely a result of the arithmetical process, it would seem that there is no reason why the resemblance should not be equally strong with members of other groups.

The full mathematical investigation of the process, of which I have given a general description above, is as follows :—

Quoting from a letter of Professor Stokes: "Suppose in the "first instance that we are dealing with a function of the time "expressed by a simple harmonic term, I mean, a sine or cosine. "Let x be a number proportional to the time, and increasing by 2π "for one period. Take the coefficient of the sine or cosine for "unity. Suppose we divide the whole time, extending if you like "from minus infinity to plus infinity, into equal intervals, and con- "sider the function in the first instance only for the end of each "interval. Suppose that we take the mean of n consecutive values

" of the function, a being the constant difference of x in passing " from one to the next, the terms being say :—

$$\text{Cos } (x + \xi),\ \cos (x + \xi + a),\ \cos (x + \xi + 2a),\ \&c.,$$

" the mean of n consecutive terms will be

$$\frac{\sin \frac{na}{2}}{n \sin \frac{a}{2}} \times \cos \left(x + \xi + \frac{n-1}{2} a \right)$$

" which corresponds in phase with the phase of the middle term if " n be odd, or with a value of $n + \xi$ half way between those of the " two middle terms if n be even, and which has for coefficient the " original coefficient multiplied by C, where

$$C = \frac{\sin \frac{n\pi}{N}}{n \sin \frac{\pi}{N}}$$

" if N denote the number of times that the interval of x is con- " tained in the period."

In the process employed in the paper, n is taken in succession equal to 4 and 10. For simplicity we will suppose the result in the latter case deducted from that in the former, instead of being divided into it. This " leads to a function agreeing in phase and " period with the original, but having the coefficient multiplied by " C′, where

$$C' = \frac{\sin \frac{4\pi}{N}}{4 \sin \frac{\pi}{N}} - \frac{\sin \frac{10\pi}{N}}{10 \sin \frac{\pi}{N}}$$

The following table gives the values of C' for the values 2, 3, 4—16 of N, corresponding to a periodic inequality of 2, 3, 4—16 years :—

N.	C'	N.	C'
2	0	10	·77
3	−·15	11	·71
4	−·14	12	·64
5	·25	13	·60
6	·60	14	·53
7	·79	15	·48
8	·84	16	·45
9	·82		

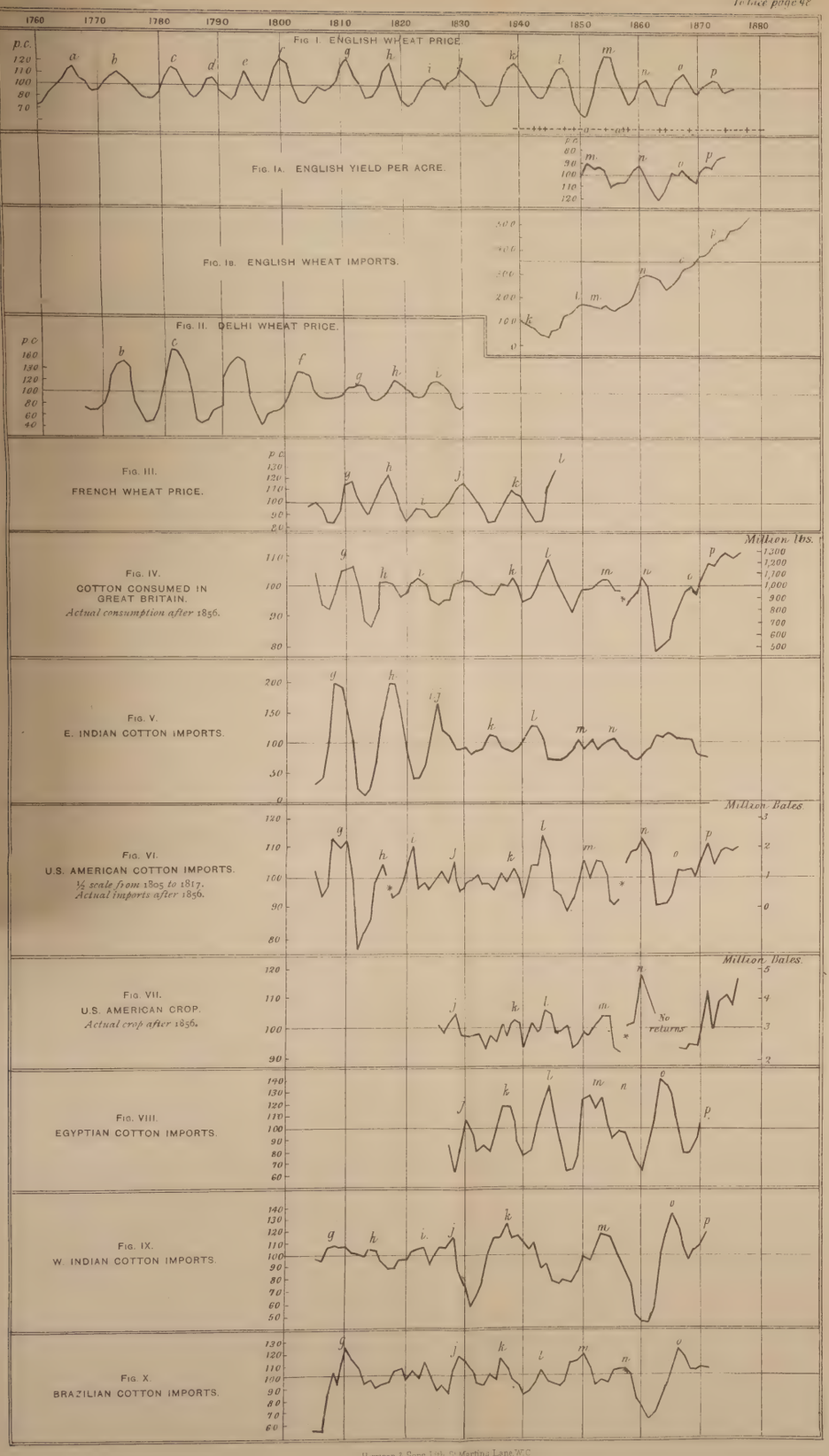
Thus while for eight, nine, and ten-year periods the process saves about 80 per cent. of the coefficient, it falls to 60 per cent. on the one side for six years, and to 45 per cent. on the other for sixteen years.

APPENDIX.

TABLE I.—*The Price of Wheat per Quarter in England since* 1756, *with the Ten-Yearly and Four-Yearly Averages and the Percentage which the latter is of the former. See Fig.* 1.

Year.	Price in Shillings per Quarter.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.	Year.	Price in Shillings per Quarter.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.	Year.	Price in Shillings per Quarter.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1756	40·1	—	—	—	1798	51·8	74·17	71·9	97·0	1840	66·3	57·97	64·6	111·4
'57	53·3	—	—	—	'99	69·0	75·17	88·3	117·4	'41	64·3	58·59	59·5	101·5
'58	44·4	—	—	—						'42	57·3	59·98	55·7	92·9
'59	35·2	—	—	—	1800	113·0	76·62	92·8	121·1	'43	50·1	58·57	52·4	89·4
					'01	119·5	76·67	90·3	117·8	'44	51·3	55·93	51·7	92·4
1760	32·4	39·25	32·3	82·3	'02	69·8	78·83	77·6	98·4	'45	50·8	53·33	56·6	106·1
'61	26·8	39·55	32·5	82·2	'03	58·8	81·78	70·1	85·7	'46	54·7	50·75	56·4	111·1
'62	34·7	39·95	34·8	92·1	'04	62·3	84·61	72·5	85·7	'47	69·7	49·09	54·8	111·6
'63	36·1	40·89	40·1	98·1	'05	89·7	83·95	76·6	91·3	'48	50·5	49·41	51·2	103·6
'64	41·5	41·43	42·2	101·8	'06	79·1	81·53	81·3	99·7	'49	44·3	51·54	43·4	84·2
'65	48·0	42·55	47·5	111·6	'07	75·3	87·20	83·2	95·4					
'66	43·1	44·73	50·5	112·9	'08	81·3	92·29	90·1	97·6	1850	40·3	53·91	40·9	75·9
'67	57·3	46·49	48·7	104·8	'09	97·3	93·49	95·1	101·7	'51	38·5	55·36	43·2	78·0
'68	53·8	48·14	48·8	101·4						'52	40·7	54·02	51·2	94·8
'69	40·6	49·42	46·6	94·3	1810	106·4	91·08	106·4	116·8	'53	53·3	53·39	60·3	112·9
					'11	95·3	91·02	109·5	120·3	'54	72·4	53·33	67·4	126·4
1770	43·6	49·60	46·3	93·3	'12	126·5	93·18	101·4	108·8	'55	74·7	54·63	68·1	124·6
'71	48·6	49·22	49·3	100·2	'13	109·7	93·68	94·0	100·3	'56	69·2	56·31	61·1	108·5
'72	52·3	48·18	51·9	107·7	'14	74·3	91·39	82·1	89·8	'57	56·3	57·78	53·3	92·2
'73	52·6	47·13	52·2	110·7	'15	65·6	87·54	78·8	90·0	'58	44·2	56·92	49·4	86·8
'74	54·3	46·54	49·0	105·3	'16	78·5	83·62	81·8	97·8	'59	43·7	53·70	49·1	91·4
'75	49·8	45·85	47·6	103·8	'17	96·9	75·43	84·0	111·3					
'76	39·3	45·59	44·8	98·3	'18	86·3	69·79	81·4	116·6					
'77	46·9	45·29	41·0	90·5	'19	74·5	68·75	71·2	103·5	1860	53·3	50·41	51·9	103·0
'78	43·3	45·46	40·4	88·9						'61	55·3	48·48	52·2	107·7
'79	34·7	45·06	40·2	89·2	1820	67·8	69·04	60·7	87·9	'62	55·4	49·29	48·9	99·2
					'21	56·1	67·06	55·4	82·6	'63	44·7	51·25	45·5	88·8
1780	36·7	44·39	41·7	93·9	'22	44·6	63·22	54·5	86·2	'64	40·2	51·70	44·1	85·3
'81	46·0	44·46	46·6	104·8	'23	53·3	60·63	57·6	95·0	'65	41·8	51·05	49·1	96·2
'82	49·3	44·01	50·0	113·6	'24	63·9	59·82	61·8	103·3	'66	49·9	51·19	54·9	107·2
'83	54·3	44·31	49·2	111·0	'25	68·5	59·46	62·4	105·0	'67	64·4	51·35	56·5	110·0
'84	50·3	46·11	46·9	101·7	'26	58·7	60·48	61·5	101·7	'68	63·7	52·75	55·8	105·8
'85	43·1	47·91	43·9	91·6	'27	58·5	61·89	61·0	98·6	'69	48·2	54·30	53·9	99·3
'86	40·0	48·17	42·9	89·1	'28	60·4	61·85	62·4	100·9					
'87	42·4	47·54	45·3	95·3	'29	66·3	60·08	64·3	107·0	1870	46·8	54·64	52·2	95·5
'88	46·3	47·04	49·0	104·2						'71	56·7	54·27	54·8	101·0
'89	52·7	47·24	50·1	106·0	1830	64·3	57·16	63·9	111·7	'72	57·0	53·51	57·0	106·5
					'31	66·3	56·14	60·5	107·8	'73	58·7	51·77	54·2	104·7
1790	54·7	50·45	49·7	98·5	'32	58·7	55·87	56·0	100·2	'74	55·7	51·33	49·5	96·4
'91	48·6	54·31	48·9	90·0	'33	52·9	56·29	49·3	87·6	'75	45·2	51·08	51·0	99·8
'92	43·0	55·44	48·3	87·1	'34	46·2	56·73	46·7	82·3	'76	46·2	—	—	—
'93	49·3	55·99	54·9	98·1	'35	39·3	56·93	47·4	83·3	'77	56·8	—	—	—
'94	52·3	57·62	63·8	110·7	'36	48·5	56·73	52·1	91·9	'78	46·4	—	—	—
'95	75·2	63·45	64·9	102·3	'37	55·8	56·59	59·9	105·8	'79	43·8	—	—	—
'96	78·6	70·54	64·8	91·9	'38	64·6	56·31	64·3	114·2					
'97	53·7	73·22	63·3	86·4	'39	70·7	56·82	66·5	117·0	1880	44·3	—	—	—

To face page 48


1760 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880
Fig. I. ENGLISH WHEAT PRICE.
Fig. Ia. ENGLISH YIELD PER ACRE.
Fig. Ib. ENGLISH WHEAT IMPORTS.
Fig. II. DELHI WHEAT PRICE.
Fig. III. FRENCH WHEAT PRICE.
Fig. IV. COTTON CONSUMED IN GREAT BRITAIN. Actual consumption after 1856.
Million lbs.
Fig. V. E. INDIAN COTTON IMPORTS.
Fig. VI. U.S. AMERICAN COTTON IMPORTS. ½ scale from 1805 to 1817. Actual imports after 1856.
Million Bales.
Fig. VII. U.S. AMERICAN CROP. Actual crop after 1856.
No returns
Fig. VIII. EGYPTIAN COTTON IMPORTS.
Fig. IX. W. INDIAN COTTON IMPORTS.
Fig. X. BRAZILIAN COTTON IMPORTS.

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To face page 48

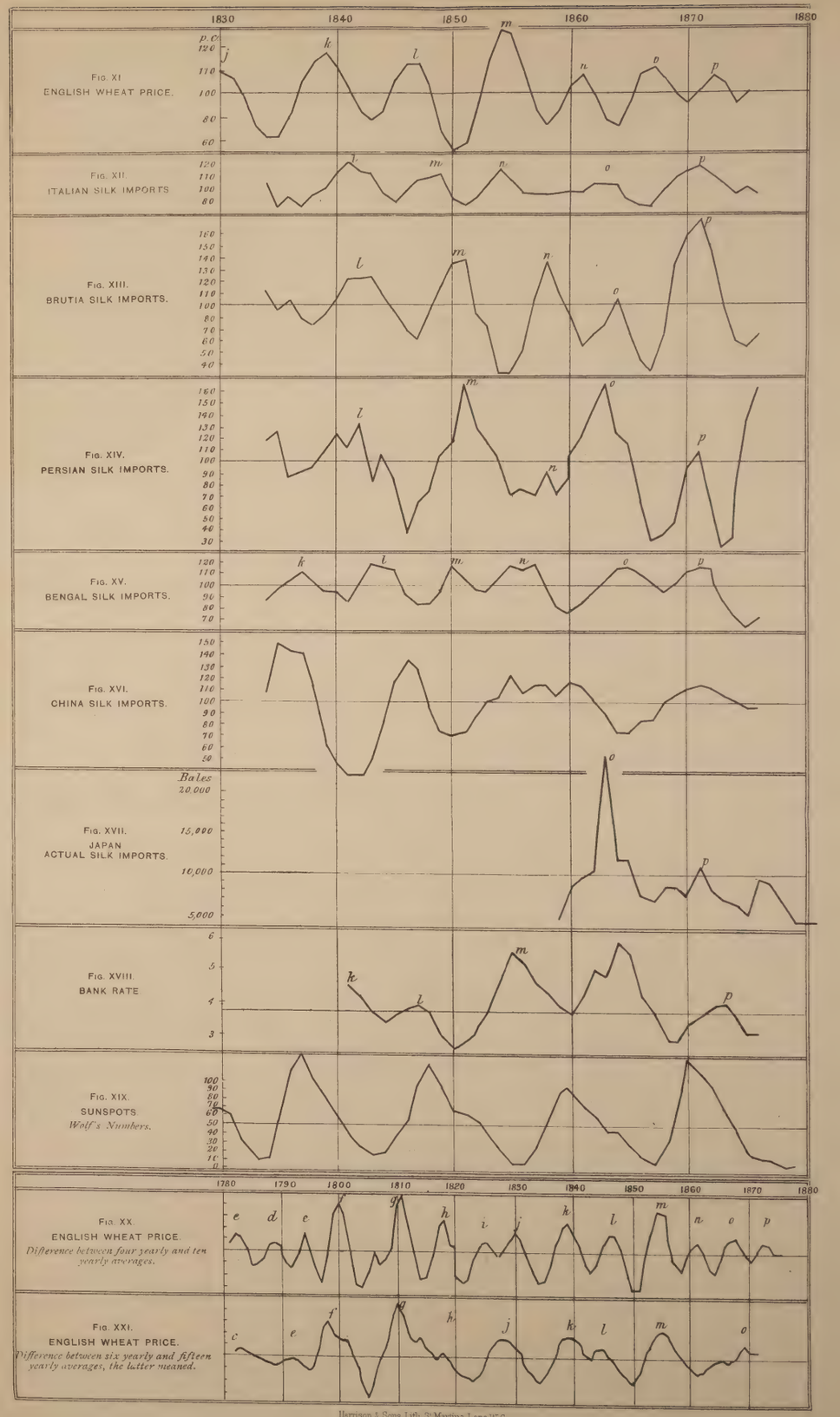
1830 1840 1850 1860 1870 1880
Fig. XI. ENGLISH WHEAT PRICE.
Fig. XII. ITALIAN SILK IMPORTS
Fig. XIII. BRUTIA SILK IMPORTS.
Fig. XIV. PERSIAN SILK IMPORTS.
Fig. XV. BENGAL SILK IMPORTS.
Fig. XVI. CHINA SILK IMPORTS.
Bales
Fig. XVII. JAPAN. ACTUAL SILK IMPORTS.
Fig. XVIII. BANK RATE
Fig. XIX. SUNSPOTS. Wolf's Numbers.
1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880
Fig. XX. ENGLISH WHEAT PRICE. Difference between four yearly and ten yearly averages.
Fig. XXI. ENGLISH WHEAT PRICE. Difference between six yearly and fifteen yearly averages, the latter meaned.

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TABLE II.—*The Price of Wheat at Delhi in Rupees per One Thousand Seers, from* 1763 *to* 1835 (Jevons, "Nature," vol. xix, p. 588), *treated as in Table I. See Fig.* 2.

Year.	Price in Rupees.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.	Year.	Price in Rupees.	Ten-Yearly Average	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1763	50	—	—	—	1800	22	27·0	22·0	81·5
'64	35	—	—	—	'01	23	28·7	34·0	118·5
'65	27	—	—	—	'02	25	30·0	40·0	133·3
'66	24	—	—	—	'03	65	32·8	43·0	131·1
'67	23	30·3	23·0	75·9	'04	48	35·1	44·0	125·3
'68	21	35·3	24·0	68·0	'05	33	35·4	35·0	98·5
'69	24	37·1	26·5	71·4	'06	31	35·9	32·0	89·1
					'07	28	37·8	34·0	89·9
1770	28	38·4	31·0	80·7	'08	36	35·6	32·0	89·9
'71	33	38·5	50·0	129·9	'09	40	33·8	32·0	94·7
'72	38	37·9	55·0	145·1					
'73	100	38·3	58·0	151·4	1810	25	32·8	34·0	103·6
'74	53	39·2	54·5	139·0	'11	28	32·5	35·0	107·7
'75	40	40·9	34·0	83·1	'12	44	33·8	36·0	106·5
'76	25	43·1	27·0	62·6	'13	43	34·1	35·0	102·6
'77	17	48·4	25·0	51·7	'14	30	34·3	31·0	90·4
'78	25	55·1	30·0	54·4	'15	23	36·4	30·5	83·8
'79	33	53·8	39·5	73·4	'16	28	37·4	33·0	88·2
					'17	41	36·5	37·5	102·7
1780	45	52·3	56·0	107·1	'18	39	35·5	42·0	118·3
'81	55	52·1	89·5	171·7	'19	42	36·4	41·0	112·7
'82	91	52·6	88·0	167·3					
'83	167	52·4	81·0	154·5	1820	46	38·0	40·0	105·3
'84	40	51·5	64·0	124·3	'21	38	40·0	38·0	95·0
'85	25	49·6	27·5	55·4	'22	35	38·9	36·0	92·5
'86	23	47·4	23·0	48·5	'23	33	37·2	36·5	98·1
'87	22	46·4	23·0	49·6	'24	39	35·1	40·0	114·0
'88	23	35·1	24·0	68·4	'25	39	32·6	39·0	119·6
'89	24	34·3	26·5	77·3	'26	48	31·4	35·0	111·5
					'27	30	30·1	30·0	99·7
1790	26	33·2	41·0	123·5	'28	22	30·1	23·5	78·1
'91	33	32·3	48·5	150·1	'29	21	30·2	22·5	74·5
'92	81	31·6	50·0	158·2					
'93	54	30·1	45·0	149·5	1830	21	28·8	22·5	78·1
'94	32	29·4	28·5	96·9	'31	26	—	—	—
'95	14	29·0	19·0	65·5	'32	22	—	—	—
'96	14	28·0	13·0	46·4	'33	33	—	—	—
'97	15	22·4	13·5	60·3	'34	40	—	—	—
'98	8	23·5	15·5	66·0	'35	25	—	—	—
'99	17	25·1	17·5	69·7					

TABLE III.—*The Price of Wheat in France in Francs per Setier de Paris from* 1800 *to* 1850. (McCulloch's "Commercial Dictionary,"), *treated as in Table I. See Fig.* 3.

Year.	Price in Francs.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1800	21·5	—	—	—
'01	24·4	—	—	—
'02	24·2	—	—	—
'03	18·8	—	—	—
'04	20·2	20·00	19·85	99·2
'05	20·2	19·81	19·80	100·0
'06	20·2	19·98	18·90	94·6
'07	18·6	20·99	17·70	84·3
'08	16·7	21·37	17·50	81·9
'09	15·2	21·10	19·55	92·6
1810	19·6	21·03	23·80	113·2
'11	26·1	21·84	25·65	117·4
'12	34·3	23·60	25·10	106·3
'13	22·6	24·40	23·50	96·2
'14	17·5	24·72	22·00	89·0
'15	19·5	24·67	25·40	103·0
'16	28·3	23·84	27·20	114·1
'17	36·2	22·00	26·90	122·3
'18	24·7	21·49	24·60	114·5
'19	18·4	21·39	20·00	93·5
1820	19·1	21·01	17·80	84·7
'21	17·8	19·66	17·60	89·5
'22	15·9	17·87	16·90	94·6
'23	17·5	17·60	16·40	93·2
'24	16·5	18·02	16·10	89·4
'25	15·7	18·23	16·30	89·4
'26	14·8	18·66	17·70	94·9
'27	18·3	19·30	19·40	100·5
'28	22·0	19·18	21·00	109·5
'29	22·6	19·00	22·00	115·8
1830	21·2	18·91	22·05	116·6
'31	22·1	19·07	20·50	107·5
'32	22·3	18·99	18·85	99·3
'33	16·3	18·72	17·00	90·8
'34	14·7	18·71	15·55	83·1
'35	14·8	18·79	15·85	84·4
'36	16·4	18·41	17·00	92·3
'37	17·5	18·15	18·90	104·1
'38	19·3	18·54	20·30	109·5
'39	22·5	18·97	20·50	108·0
1840	22·0	19·38	20·60	106·2
'41	18·3	22·13	20·05	90·6
'42	19·7	23·32	19·30	82·8
'43	20·2	23·03	19·45	84·5
'44	19·0	22·31	25·50	114·3
'45	18·9	21·54	27·80	129·0
'46	43·9	—	—	—
'47	29·4	—	—	—
'48	16·4	—	—	—
'49	15·3	—	—	—
1850	14·3	—	—	—

TABLE IV.—*Estimated Yield per Acre of Wheat in England,* 100 = 28 *Bushels per Acre* (Caird, "Journal of the Statistical Society," 1879, p. 482), *with the Four-Yearly Average. See Fig.* 1*a*.

Year.	Yield per Acre.	Four-Yearly Average.	Year.	Yield per Acre.	Four-Yearly Average.	Year.	Yield per Acre.	Four-Yearly Average.
1849....	123	—	1859	92	94·5	1869	102	107·5
'50....	102	103·5	'60	78	92·5	'70	112	99·0
'51....	110	90·5	'61	92	105·0	'71	90	93·5
'52....	79	97·0	'62	108	117·0	'72	92	92·0
'53....	71	94·0	'63	141	121·5	'73	80	89·0
'54....	127	97·5	'64	127	114·5	'74	106	85·0
'55....	96	111·0	'65	110	100·0	'75	78	83·5
'56....	96	108·0	'66	90	100·0	'76	76	84·0
'57....	124	107·0	'67	74	98·0	'77	74	—
'58....	116	102·5	'68	126	103·5	'78	108	—

TABLE V.—*Wheat Imports into England in* 100,000 *Cwts., from* 1839 *to* 1880 ("Whitaker's Almanac," 1882, p. 424), *with the Four-Yearly Average. See Fig.* 1*b*.

Year.	Imports.	Four-Yearly Average.	Year.	Imports.	Four-Yearly Average.	Year.	Imports.	Four-Yearly Average.	Year.	Imports.	Four-Yearly Average.
1839	108	—	1850	163	164·0	1860	255	282·0	1870	298	370·0
'40	87	102·0	'51	164	167·0	'61	289	299·0	'71	388	383·0
'41	99	84·5	'52	132	162·5	'62	410	293·5	'72	419	411·0
'42	115	72·0	'53	209	150·0	'63	243	273·5	'73	428	443·0
'43	37	48·5	'54	145	160·0	'64	232	229·0	'74	408	447·5
'44	36	41·0	'55	114	144·5	'65	209	254·0	'75	518	474·0
'45	6	61·5	'56	173	154·0	'66	231	277·0	'76	436	494·5
'46	86	72·5	'57	146	169·0	'67	344	319·0	'77	533	513·0
'47	118	119·5	'58	184	189·5	'68	324	335·5	'78	491	542·0
'48	80	139·0	'59	173	225·0	'69	376	346·5	'79	591	—
'49	194	150·0							'80	553	—

TABLE VI.—*Cotton Consumed in Great Britain in Million Pounds, treated as in Table I, to* 1861. ("Encyclopædia Britannica," vol. vi.) *See Fig.* 4.

Year.	Cotton Consumed.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.	Year.	Cotton Consumed.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1801	48	—	—	—	1840	459	451·2	428·5	95·0
'02	52	—	—	—	'41	438	477·9	462·5	96·8
'03	54	—	—	—	'42	435	485·4	483·8	99·7
'04	62	—	—	—	'43	518	501·4	526·0	104·9
'05	59	60·4	63·5	105·1	'44	544	526·2	570·8	108·5
'06	59	65·4	61·8	94·5	'45	607	539·1	551·5	102·3
'07	74	67·8	62·8	92·6	'46	614	561·2	559·8	99·5
'08	55	69·5	67·8	97·6	'47	441	591·7	565·5	95·6
'09	63	69·9	73·7	105·4	'48	577	616·0	559·0	90·7
					'49	630	639·2	613·5	96·0
1810	79	72·2	79·0	109·4					
'11	98	75·2	81·0	107·7					
'12	76	78·5	77·8	99·1	1850	588	662·4	654·3	98·8
'13	71	83·9	73·8	88·0	'51	659	690·1	687·0	99·5
'14	66	88·6	77·0	86·9	'52	740	728·5	734·0	100·7
'15	82	92·7	86·0	92·8	'53	761	761·4	779·0	102·3
'16	89	95·8	96·8	101·0	'54	776	796·1	816·8	102·6
'17	107	102·8	103·8	101·1	'55	839	845·7	833·5	98·6
'18	110	111·1	111·5	100·4	'56	891	880·6	865·5	98·3
'19	110	121·0	117·0	96·7	'57	826	—	—	—
					'58	906	—	—	—
1820	120	129·5	126·3	97·5	'59	977	—	—	—
'21	129	135·6	137·3	101·2					
'22	146	144·6	148·5	102·7					
'23	154	155·5	158·0	101·6	1860	1,084	—	—	—
'24	165	166·4	159·0	95·6	'61	1,007	—	—	—
'25	167	179·2	169·8	94·7	'62	452	—	—	—
'26	150	192·6	183·0	95·0	'63	508	—	—	—
'27	197	205·7	196·0	95·3	'64	554	—	—	—
'28	218	219·0	220·5	100·7	'65	723	—	—	—
'29	219	232·8	237·0	101·8	'66	881	—	—	—
					'67	967	—	—	—
1830	248	247·9	251·8	101·6	'68	992	—	—	—
'31	263	267·6	268·8	100·4	'69	939	—	—	—
'32	277	284·5	282·5	99·3					
'33	287	304·4	296·3	97·3	1870	1,078	—	—	—
'34	303	320·7	313·8	97·8	'71	1,207	—	—	—
'35	318	341·8	333·5	97·6	'72	1,181	—	—	—
'36	347	359·3	362·0	100·7	'73	1,245	—	—	—
'37	366	375·1	378·1	100·8	'74	1,277	—	—	—
'38	417	398·2	411·0	103·2	'75	1,229	—	—	—
'39	382	422·3	424·0	100·4	'76	1,280	—	—	—

TABLE VII.—*Cotton Imports into Great Britain from East India, in Thousands of Bales, treated as in Table I.* ("Encyclopædia Britannica," vol. vi.) *See Fig.* 5.

Year.	Cotton Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.	Year.	Cotton Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1801	14	—	—	—	1840	216	192·5	219·75	114·1
'02	8	—	—	—	'41	274	175·5	232·00	132·2
'03	10	—	—	—	'42	256	183·3	237·50	129·5
'04	4	—	—	—	'43	182	195·4	207·50	106·3
'05	2	18·5	6·25	33·8	'44	238	200·3	156·00	77·9
'06	8	18·6	8·50	45·7	'45	155	209·5	166·25	79·3
'07	11	18·1	17·00	93·9	'46	49	215·0	163·75	76·2
'08	13	17·3	34·75	200·8	'47	223	211·5	170·50	80·6
'09	36	18·2	35·75	196·4	'48	228	241·8	235·25	97·3
					'49	182	248·8	261·75	105·2
1810	79	20·2	33·75	167·0					
'11	15	22·5	24·25	107·8					
'12	3	33·4	8·25	24·7	1850	308	272·9	260·00	95·3
'13	2	56·9	10·00	17·6	'51	329	314·3	335·75	106·8
'14	13	71·7	17·00	23·7	'52	221	360·0	335·75	93·3
'15	22	69·6	46·25	66·5	'53	485	373·3	352·50	94·4
'16	31	71·1	105·25	148·0	'54	308	406·2	413·00	101·7
'17	120	72·7	145·75	200·5	'55	396	431·7	461·75	107·0
'18	288	76·3	152·50	199·9	'56	463	497·5	475·00	95·5
'19	184	80·1	130·00	163·3	'57	680	582·6	503·75	86·5
					'58	361	673·2	528·75	78·5
1820	58	84·0	72·75	86·6	'59	511	822·2	605·50	73·6
'21	30	87·4	36·25	41·5					
'22	19	82·8	34·50	41·7					
'23	38	66·5	42·25	63·5	1860	563	923·4	783·25	84·8
'24	51	56·1	53·75	95·8	'61	987	1,063·8	1,003·25	94·3
'25	61	53·8	62·75	166·6	'62	1,072	1,146·9	1,312·00	114·4
'26	65	58·5	71·25	121·8	'63	1,391	1,256·0	1,417·25	112·8
'27	74	67·5	76·00	112·6	'64	1,798	1,354·5	1,616·00	119·3
'28	85	73·2	68·50	93·6	'65	1,408	1,404·5	1,646·00	117·2
'29	80	77·0	69·25	89·9	'66	1,867	1,429·4	1,559·50	109·1
					'67	1,511	1,451·0	1,581·50	109·0
1830	35	82·7	75·25	91·0	'68	1,452	1,483·2	1,630·50	109·9
'31	77	98·1	79·00	80·5	'69	1,496	1,558·8	1,311·75	84·1
'32	109	105·2	92·50	87·9					
'33	95	107·4	102·75	95·7	1870	1,063	1,594·1	1,270·75	79·7
'34	89	112·7	130·25	115·6	'71	1,236	1,482·9	1,164·00	78·5
'35	118	130·8	142·75	109·1	'72	1,288	—	—	—
'36	219	150·5	147·25	97·8	'73	1,069	—	—	—
'37	145	165·2	151·00	91·4	'74	1,042	—	—	—
'38	107	173·9	150·25	86·4	'75	1,055	—	—	—
'39	133	188·8	182·50	96·7	'76	775	—	—	—

TABLE VIII.—*Cotton Imports into Great Britain from United States, in Thousands of Bales, treated as in Table I, to* 1861. ("Encyclopædia "Britannica," vol. vi.) *See Fig.* 6.

Year.	Cotton Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.	Year.	Cotton Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1801	84	—	—	—	1840	1,238	1,074·7	992·00	92·3
'02	107	—	—	—	'41	902	1,091·4	1,137·50	104·2
'03	107	—	—	—	'42	1,013	1,094·3	1,139·75	104·1
'04	104	—	—	—	'43	1,397	1,129·3	1,289·25	114·2
'05	124	126·7	131·00	103·4	'44	1,247	1,195·6	1,266·50	105·9
'06	125	131·1	114·15	87·3	'45	1,500	1,190·2	1,138·25	95·6
'07	171	129·9	123·50	95·1	'46	932	1,239·4	1,170·25	94·4
'08	38	123·0	154·00	125·2	'47	874	1,317·0	1,164·75	88·4
'09	160	117·5	143·25	121·9	'48	1,375	1,330·5	1,227·75	92·3
					'49	1,478	1,372·4	1,357·75	98·9
1810	247	125·4	157·50	125·6					
'11	128	129·5	127·00	98·1					
'12	95	132·4	77·50	51·0	1850	1,184	1,384·7	1,461·25	105·5
'13	38	149·4	96·25	64·4	'51	1,394	1,467·3	1,474·75	100·5
'14	49	153·9	114·00	74·1	'52	1,789	1,528·1	1,595·25	104·4
'15	203	159·5	154·50	96·9	'53	1,532	1,576·9	1,652·50	104·8
'16	166	176·7	194·25	109·9	'54	1,666	1,637·7	1,644·75	100·4
'17	200	200·2	194·75	97·3	'55	1,623	1,777·4	1,632·25	91·8
'18	208	241·6	229·00	94·8	'56	1,758	1,822·1	1,681·50	92·3
'19	205	264·9	254·00	95·9	'57	1,482	—	—	—
					'58	1,863	—	—	—
1820	303	286·9	284·50	99·2	'59	2,086	—	—	—
'21	300	309·9	346·25	111·7					
'22	330	354·6	341·00	96·2					
'23	452	378·2	371·25	98·2	1860	2,581	—	—	—
'24	282	404·0	388·25	96·1	'61	1,841	—	—	—
'25	423	435·5	437·00	100·3	'62	72	—	—	—
'26	396	466·4	477·50	102·4	'63	132	—	—	—
'27	647	496·3	487·50	98·2	'64	198	—	—	—
'28	444	516·6	543·00	105·1	'65	462	—	—	—
'29	463	561·8	533·50	95·0	'66	1,163	—	—	—
					'67	1,226	—	—	—
1830	618	595·8	579·75	97·3	'68	1,269	—	—	—
'31	609	632·7	627·75	99·2	'69	1,040	—	—	—
'32	629	652·5	656·75	100·6					
'33	655	710·6	695·25	97·8	1870	1,664	—	—	—
'34	734	745·8	729·25	97·8	'71	2,249	—	—	—
'35	763	807·8	776·75	96·2	'72	1,404	—	—	—
'36	765	837·1	849·50	101·5	'73	1,898	—	—	—
'37	845	875·5	862·50	98·5	'74	1,958	—	—	—
'38	1,025	949·7	980·75	103·3	'75	1,859	—	—	—
'39	815	1001·0	995·00	99·4	'76	2,075	—	—	—

TABLE IX.—*Cotton Crop, United States, in Ten Thousands of Bales; treated as in Table I, to* 1861. ("Encyclopædia Britannica.") *See Fig.* 7.

Year.	Crop.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.	Year.	Crop.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1821	37	—	—	—	1850	217	262·7	262·25	99·8
'22	54	—	—	—	'51	242	277·5	275·75	99·4
'23	59	—	—	—	'52	309	289·4	297·50	102·8
'24	51	—	—	—	'53	335	297·7	310·25	104·2
'25	57	68·1	69·00	101·3	'54	304	309·5	324·25	104·8
'26	72	74·8	74·25	99·3	'55	293	336·0	317·00	94·3
'27	96	79·3	81·50	102·8	'56	365	350·0	322·00	92·0
'28	72	84·1	88·00	104·6	'57	306	—	—	—
'29	86	91·1	90·00	98·8	'58	324	—	—	—
					'59	399	—	—	—
1830	98	97·9	96·75	98·8					
'31	104	104·3	102·00	97·8	1860	482	—	—	—
'32	99	109·0	107·75	98·8	'61	382	—	—	—
'33	107	119·9	113·00	94·2	'62				
'34	121	124·9	122·25	97·9	'63				
'35	125	136·9	131·25	95·9	'64	no	returns		
'36	136	142·9	146·25	102·3	'65				
'37	143	149·9	149·00	99·4	'66	231	—	—	—
'38	181	163·1	169·50	103·9	'67	226	—	—	—
'39	136	172·1	174·75	101·5	'68	250	—	—	—
					'69	244	—	—	—
1840	218	184·5	171·75	93·1					
'41	164	192·6	197·50	102·5	1870	316	—	—	—
'42	169	196·9	195·75	99·4	'71	435	—	—	—
'43	239	203·0	217·00	106·9	'72	297	—	—	—
'44	211	217·5	229·00	105·5	'73	393	—	—	—
'45	249	217·4	215·75	99·2	'74	417	—	—	—
'46	217	225·2	223·50	99·2	'75	383	—	—	—
'47	186	239·4	231·50	100·9	'76	467	—	—	—
'48	242	249·0	231·50	93·0	'77	—	—	—	—
'49	281	258·3	245·50	95·0	'78	—	—	—	—

TABLE X.—*Cotton Imports into Great Britain from Egypt, in Thousands of Bales, treated as in Table I.* ("Encyclo. Brit.," vol. vi.) *See Fig.* 8.

Year.	Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1823	6	—	—	—
'24	38	—	—	—
'25	111	—	—	—
'26	48	—	—	—
'27	22	37·7	32·00	84·9
'28	33	37·5	23·75	63·3
'29	25	34·4	27·75	80·7
1830	15	27·7	29·75	107·4
'31	38	26·4	24·50	92·8
'32	41	28·3	22·50	79·5
'33	4	28·0	24·00	85·7
'34	7	28·8	22·50	78·1
'35	44	31·1	31·75	102·1
'36	35	31·4	37·50	119·4
'37	41	29·3	34·75	118·6
'38	30	33·8	35·50	105·0
'39	33	39·8	35·50	89·2
1840	38	43·6	34·00	78·0
'41	41	46·1	37·00	80·3
'42	20	44·1	44·25	100·3
'43	49	44·0	54·50	123·9
'44	67	47·9	64·50	134·7
'45	82	52·0	57·50	110·6
'46	60	54·6	48·00	87·9
'47	21	71·6	45·50	63·5
'48	29	77·2	50·25	65·1
'49	72	78·6	61·75	78·6
1850	79	81·9	102·00	124·5
'51	67	87·3	110·25	126·3
'52	190	92·8	108·25	116·6
'53	105	100·5	122·75	122·1
'54	81	103·4	103·75	100·3
'55	115	106·4	96·00	90·2
'56	114	109·5	102·75	95·8
'57	76	105·2	99·25	94·3
'58	106	119·5	98·00	82·0
'59	101	143·3	103·50	72·2
1860	109	173·2	113·75	65·7
'61	98	181·8	150·50	82·8
'62	147	194·0	203·00	104·7
'63	248	203·5	282·00	138·5
'64	319	216·0	295·25	136·7
'65	414	227·1	282·75	124·5
'66	200	244·5	253·25	103·6
'67	198	260·3	206·25	79·2
'68	201	268·3	211·25	78·7
'69	226	266·4	229·75	86·2
1870	220	253·1	255·75	101·0
'71	272	266·3	281·25	105·6
'72	305	—	—	—
'73	328	—	—	—
'74	300	—	—	—
'75	281	—	—	—
'76	332	—	—	—

TABLE XI.—*Cotton Imports into Great Britain from West Indies, in Thousands of Bales, treated as in Table I.* ("Encyclopædia Britannica," vol. vi.) *See Fig.* 9.

Year.	Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.	Year.	Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1801	92	—	—	—	1840	22	24·2	27·00	111·5
'02	91	—	—	—	'41	33	21·8	22·50	103·2
'03	46	—	—	—	'42	17	19·5	21·25	109·0
'04	86	—	—	—	'43	18	17·4	15·25	87·7
'05	75	81·1	80·00	98·7	'44	17	14·7	13·25	90·1
'06	78	78·4	75·25	96·0	'45	9	13·1	10·00	76·3
'07	81	75·7	82·25	108·6	'46	9	10·3	7·75	75·2
'08	67	78·4	85·75	109·3	'47	5	9·9	7·75	78·3
'09	103	77·3	81·75	105·7	'48	8	9·0	7·00	77·8
					'49	9	8·3	7·00	84·3
1810	92	75·1	81·00	107·8					
'11	65	72·2	73·50	101·8					
'12	64	68·6	69·25	100·9	1850	6	8·3	8·25	99·4
'13	73	67·0	66·25	98·9	'51	5	8·5	8·25	97·1
'14	75	59·8	62·50	104·5	'52	13	9·1	9·25	101·6
'15	53	53·7	55·50	103·3	'53	9	8·9	10·25	115·2
'16	49	51·3	49·50	96·5	'54	10	8·7	9·75	112·0
'17	45	49·0	44·00	89·8	'55	9	9·1	10·25	112·6
'18	51	44·5	39·50	88·8	'56	11	9·6	9·25	96·4
'19	31	39·6	38·50	97·2	'57	11	10·3	8·75	85·0
					'58	6	11·7	8·50	72·6
1820	31	37·5	36·00	96·0	'59	7	16·7	8·25	49·4
'21	41	34·4	35·25	102·4					
'22	41	33·0	34·00	103·0					
'23	28	29·9	31·75	106·2	1860	10	28·9	11·75	40·7
'24	26	28·7	26·00	90·6	'61	10	39·0	15·75	40·4
'25	32	26·8	26·75	99·8	'62	20	50·8	28·25	55·6
'26	18	23·8	25·25	106·1	'63	23	60·3	58·50	97·0
'27	31	20·5	22·00	107·3	'64	60	70·2	81·50	116·1
'28	20	19·0	21·50	113·1	'65	131	80·4	108·00	134·3
'29	19	18·1	15·50	85·6	'66	112	92·6	118·25	127·7
					'67	129	107·2	112·00	104·5
1830	12	17·2	12·50	72·7	'68	101	118·7	112·00	94·4
'31	11	18·7	11·00	58·8	'69	106	124·5	113·00	103·8
'32	8	18·4	12·25	66·6					
'33	13	19·3	15·25	79·0	1870	112	120·3	129·25	107·4
'34	17	21·0	21·50	102·4	'71	133	116·1	137·25	118·2
'35	23	22·0	25·25	114·8	'72	166	—	—	—
'36	33	24·2	28·25	116·7	'73	138	—	—	—
'37	28	25·1	31·50	125·5	'74	118	—	—	—
'38	29	25·6	28·75	112·3	'75	89	—	—	—
'39	36	25·6	30·00	117·2	'76	70	—	—	—

TABLE XII.—*Cotton Imports into Great Britain from Brazil, in Thousands of Bales, treated as in Table I.* ("Encyclopædia Britannica," vol. vi.) *See Fig.* 10.

Year.	Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.	Year.	Imports.	Four-Yearly Average.	Ten-Yearly Average.	Per Cent. 4 Years of 10 Years.
1801	70	—	—	—	1840	85	109·0	91·0	83·5
'02	75	—	—	—	'41	94	102·5	91·0	88·8
'03	76	—	—	—	'42	87	101·8	98·0	96·3
'04	48	—	—	—	'43	98	98·0	102·0	104·1
'05	51	72·4	42·0	58·0	'44	113	104·5	101·0	96·7
'06	51	77·2	43·0	57·4	'45	110	113·2	104·0	91·9
'07	19	79·6	65·0	81·6	'46	84	114·7	104·0	90·7
'08	50	85·7	88·0	102·7	'47	110	120·4	114·5	95·1
'09	141	96·0	90·5	94·3	'48	100	123·9	136·5	110·2
					'49	164	123·3	136·0	110·8
1810	143	100·0	125·0	125·0					
'11	118	107·2	124·0	115·6					
'12	99	116·7	126·0	108·0	1850	172	125·8	147·0	116·8
'13	137	127·9	119·5	93·4	'51	109	129·6	139·5	107·6
'14	151	126·4	124·5	98·5	'52	144	135·5	123·0	90·8
'15	91	130·1	120·0	92·2	'53	133	136·1	130·0	95·5
'16	123	130·4	122·5	93·9	'54	107	132·2	124·0	93·8
'17	114	134·8	131·0	97·2	'55	135	125·3	134·0	107·0
'18	162	135·6	145·5	107·3	'56	122	124·4	134·0	107·7
'19	126	134·8	147·0	109·1	'57	169	123·4	130·5	105·7
					'58	106	123·9	126·0	101·7
1820	180	145·1	142·5	98·2	'59	125	134·4	108·5	80·7
'21	121	138·3	147·0	106·3					
'22	143	138·9	138·0	99·3	1860	103	154·9	115·5	74·6
'23	145	139·4	156·0	111·9	'61	100	183·4	119·0	64·9
'24	143	142·8	144·0	100·8	'62	134	210·2	146·0	69·5
'25	194	143·9	128·0	89·0	'63	138	263·3	206·0	78·2
'26	55	148·6	134·0	90·2	'64	212	302·2	274·0	90·7
'27	120	145·8	125·5	86·1	'65	340	332·2	349·0	105·0
'28	167	147·6	159·5	108·1	'66	407	373·7	455·0	121·7
'29	160	143·7	171·5	119·4	'67	437	432·0	499·0	115·5
					'68	637	465·3	498·0	107·0
1830	191	138·6	158·5	114·4	'69	514	493·8	517·0	104·7
'31	168	148·0	159·0	107·4					
'32	115	147·7	137·5	93·1					
'33	163	144·8	131·0	90·5	1870	403	502·2	537·0	106·9
'34	104	138·7	140·0	100·9	'71	515	494·6	526·5	106·5
'35	143	128·1	128·0	99·9	'72	717	—	—	—
'36	149	120·7	137·0	113·5	'73	471	—	—	—
'37	117	117·9	126·0	106·9	'74	497	—	—	—
'38	138	111·4	110·0	98·7	'75	424	—	—	—
'39	99	112·3	104·0	92·6	'76	331	—	—	—

TABLE XIII.—*Silk Imports into Great Britain from Italy, in Hundreds of Bales treated as in Table I.* (Durant's Circular.) $\frac{25}{28}$ *Actual Numbers from* 1830 *to* 1839, *to equalise Weights. See Fig.* 12.

Year.	Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1830	57	—	—	—
'31	59	—	—	—
'32	41	—	—	—
'33	56	—	—	—
'34	32	47·5	47·75	100·5
'35	51	48·9	41·00	83·9
'36	52	48·2	44·75	92·8
'37	29	51·7	44·75	86·6
'38	47	52·8	49·50	93·7
'39	51	55·8	55·25	99·0
1840	71	56·4	62·50	110·8
'41	52	55·4	66·50	120·0
'42	76	56·2	64·25	114·3
'43	67	58·9	65·50	111·2
'44	62	59·6	57·00	95·6
'45	57	56·2	49·50	88·1
'46	42	54·2	52·50	96·9
'47	37	49·3	52·75	107·0
'48	74	47·2	51·50	109·1
'49	58	45·3	50·25	110·9
1850	37	42·5	38·50	90·6
'51	32	41·1	35·50	86·4
'52	27	40·3	37·00	91·8
'53	46	35·4	36·25	102·4
'54	43	32·2	36·50	113·3
'55	29	30·3	32·25	106·4
'56	28	29·0	27·75	95·7
'57	29	28·4	27·00	95·1
'58	25	25·9	24·50	94·6
'59	26	23·2	22·00	94·8
1860	18	21·8	21·00	96·3
'61	19	20·6	19·75	95·9
'62	21	19·2	19·25	100·3
'63	21	18·0	18·25	101·4
'64	16	16·7	17·00	101·8
'65	15	17·4	15·50	89·1
'66	16	17·7	14·75	83·3
'67	15	17·2	14·25	82·8
'68	13	16·7	16·50	98·8
'69	13	16·9	18·25	108·0
1870	25	17·0	19·00	111·7
'71	22	16·6	19·75	119·0
'72	16	16·3	18·00	110·4
'73	16	16·2	16·50	101·8
'74	18	16·2	15·50	95·7
'75	16	14·7	14·50	98·6
'76	12	13·7	13·00	94·9
'77	12	—	—	—
'78	12	—	—	—
'79	13	—	—	—
1880	10	—	—	—
'81	12	—	—	—

TABLE XIV.—*Silk Imports into Great Britain from Brutia, in Bales, treated as in Table I.* (Durant's Circular.) $\frac{17}{20}$ *Actual Numbers from* 1830 *to* 1842, *to equalise Weights. See Fig.* 13.

Year.	Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1830	2,020	—	—	—
'31	1,520	—	—	—
'32	1,140	—	—	—
'33	1,480	—	—	—
'34	1,180	1,706·0	1,915·00	112·2
'35	2,300	1,774·0	1,740·00	98·1
'36	2,700	1,848·0	1,970·00	106·6
'37	780	2,040·0	1,855·00	90·9
'38	2,100	2,168·0	1,855·00	85·6
'39	1,840	2,353·0	2,225·00	94·6
1840	2,700	2,330·0	2,465·00	105·8
'41	2,260	2,211·0	2,695·00	121·9
'42	3,060	2,258·0	2,777·50	123·0
'43	2,760	2,192·0	2,730·00	124·5
'44	3,030	2,124·0	2,342·50	110·3
'45	2,070	2,078·0	1,965·00	94·6
'46	1,510	1,964·0	1,567·50	79·8
'47	1,250	1,808·0	1,340·00	74·1
'48	1,440	1,595·0	1,522·50	95·5
'49	1,160	1,307·0	1,490·00	114·0
1850	2,240	1,125·0	1,505·00	133·7
'51	1,120	988·0	1,372·50	138·9
'52	1,500	893·0	850·00	95·2
'53	630	775·0	632·50	81·6
'54	150	687·0	292·50	42·6
'55	250	478·0	210·00	43·9
'56	140	375·8	237·50	63·2
'57	300	233·8	245·00	104·8
'58	260	180·2	247·50	137·3
'59	280	176·6	197·00	111·5
1860	150	162·0	152·00	93·8
'61	98	157·0	105·50	67·2
'62	80	132·9	96·50	72·6
'63	94	116·4	98·00	84·2
'64	114	97·0	105·50	103·6
'65	104	120·1	91·75	76·4
'66	90	164·0	87·00	53·0
'67	59	189·9	82·50	43·4
'68	95	200·3	155·25	77·5
'69	86	205·2	274·75	133·9
1870	381	209·4	335·75	160·3
'71	537	209·5	363·75	173·6
'72	339	212·4	309·25	145·6
'73	198	211·7	211·50	99·9
'74	163	213·3	149·50	70·1
'75	146	184·6	122·00	66·1
'76	91	138·2	103·25	74·7
'77	88	—	—	—
'78	88	—	—	—
'79	102	—	—	—
1880	94	—	—	—
'81	73	—	—	—

TABLE XV.—*Silk Imports into Great Britain from Persia, in Ballots, treated as in Table I.* (Durant's Circular.) *See Fig.* 14.

Year.	Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1830	455	—	—	—
'31	1,569	—	—	—
'32	729	—	—	—
'33	729	—	—	—
'34	2,120	1,472·5	1,748·0	118·7
'35	2,128	1,691·2	2,148·5	127·0
'36	2,016	1,832·4	1,643·0	89·6
'37	2,330	1,890·1	1,749·0	92·5
'38	99	1,987·2	1,905·0	95·9
'39	2,550	2,105·5	2,293·0	108·9
1840	2,642	1,912·5	2,370·0	123·9
'41	2,981	1,931·9	2,157·0	111·6
'42	1,306	1,781·4	2,322·5	130·4
'43	1,700	1,910·4	1,627·0	85·2
'44	3,303	1,763·9	1,853·0	105·0
'45	198	1,925·6	1,634·0	84·9
'46	2,210	1,929·5	1,155·5	39·4
'47	825	2,102·1	1,377·0	65·5
'48	1,389	2,514·5	1,889·5	75·1
'49	1,085	2,352·0	2,438·0	103·6
1850	4,259	2,485·2	2,849·0	114·6
'51	3,020	2,450·0	4,034·0	164·6
'52	3,032	2,614·9	3,388·5	129·6
'53	5,824	2,580·5	3,016·0	116·9
'54	1,678	2,632·2	2,722·5	103·4
'55	1,530	2,446·1	1,785·0	73·0
'56	1,858	2,268·3	1,727·0	76·1
'57	2,474	2,407·0	1,745·0	72·5
'58	1,045	2,071·9	1,880·0	90·7
'59	1,602	2,239·1	1,572·0	70·2
1860	2,398	2,338·5	2,415·0	103·3
'61	1,242	2,216·6	2,633·0	118·8
'62	4,419	2,027·8	2 871·0	141·6
'63	2,473	1,926·3	3,191·5	165·7
'64	3,350	1,773·1	2,246·5	126·7
'65	2,524	1,581·7	1,775·0	112·2
'66	639	1,485·7	945·0	63·6
'67	586	1,043·8	331·0	31·7
'68	30	797·7	292·5	36·7
'69	70	467·5	216·5	46·3
1870	484	223·1	209·0	93·7
'71	282	181·7	194·5	107·0
'72	—	125·6	85·5	68·1
'73	12	122·8	35·0	28·5
'74	48	117·8	91·0	77·2
'75	80	70·4	94·5	134·2
'76	225	51·4	83·0	161·5
'77	25	—	—	—
'78	2	—	—	—
'79	20	—	—	—
1880	10	—	—	—
'81	89	—	—	—

TABLE XVI.—*Silk Imports into Great Britain from Bengal, in Hundreds of Bales, treated as in Table I.* (Durant's Circular.) $\frac{2}{3}$ *Actual Numbers for* 1858-60, *to equalise Weights. See Fig.* 15.

Year.	Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1830	87	—	—	—
'31	75	—	—	—
'32	66	—	—	—
'33	52	—	—	—
'34	63	74·5	66·25	88·9
'35	69	73·2	72·75	99·4
'36	81	73·3	76·75	104·7
'37	78	75·6	84·25	111·4
'38	79	78·5	81·50	103·8
'39	95	83·7	81·00	96·8
1840	74	88·8	83·50	94·0
'41	76	89·5	80·00	89·4
'42	89	89·0	90·25	101·4
'43	81	86·0	101·25	117·7
'44	115	86·6	101·00	116·6
'45	120	89·5	99·00	110·6
'46	88	90·7	82·50	91·0
'47	73	93·5	77·75	83·2
'48	49	94·4	81·50	86·3
'49	101	92·2	85·25	92·5
1850	103	88·4	102·25	115·7
'51	88	93·4	99·50	106·5
'52	117	98·6	97·00	98·3
'53	90	100·5	95·50	95·0
'54	93	97·4	100·75	103·4
'55	82	93·5	109·50	117·3
'56	138	90·8	103·25	113·7
'57	125	85·2	100·25	117·6
'58	68	83·5	81·25	97·3
'59	70	81·8	65·75	80·4
1860	62	82·6	64·00	77·5
'61	63	77·3	64·75	83·8
'62	61	72·4	68·25	94·3
'63	73	71·8	75·00	104·5
'64	76	70·4	81·00	115·1
'65	90	70·2	81·75	116·4
'66	85	71·2	78·25	109·9
'67	76	69·7	69·75	100·1
'68	62	65·9	63·50	96·4
'69	56	60·7	62·75	103·4
1870	60	53·1	58·75	110·6
'71	73	46·1	53·50	116·0
'72	46	39·3	44·50	113·2
'73	35	34·2	29·75	87·0
'74	24	29·4	22·00	74·8
'75	14	23·8	15·25	64·1
'76	15	17·1	12·00	70·2
'77	8	—	—	—
'78	11	—	—	—
'79	8	—	—	—
1880	4	—	—	—
'81	6	—	—	—

TABLE XVII.—*Silk Imports into Great Britain from China, in Hundreds of Bales, treated as in Table I.* (Durant's Circular.) *See Fig.* 16.

Year.	Imports.	Ten-Yearly Average.	Four-Yearly Average.	Per Cent. 4 Years of 10 Years.
1830.....	48	—	—	—
'31.....	51	—	—	—
'32.....	83	—	—	—
'33.....	59	—	—	—
'34.....	95	83·1	90·75	109·2
'35.....	79	81·4	122·00	149·9
'36.....	130	80·0	114·50	143·1
'37.....	184	73·7	104·00	141·1
'38.....	65	70·5	79·25	112·6
'39.....	37	64·8	42·50	65·6
1840.....	31	68·3	31·25	45·8
'41.....	37	75·6	28·75	38·0
'42.....	20	79·6	30·50	38·3
'43.....	27	96·8	49·75	51·4
'44.....	38	114·5	95·50	83·4
'45.....	114	122·4	144·25	118·2
'46.....	203	141·8	194·50	137·1
'47.....	224	168·5	219·50	130·3
'48.....	237	201·4	196·25	97·4
'49.....	214	254·8	198·00	77·7
1850.....	110	295·6	210·50	71·2
'51.....	231	333·9	246·00	73·7
'52.....	287	406·3	361·50	89·0
'53.....	356	430·9	434·25	100·8
'54.....	572	487·1	509·00	104·5
'55.....	522	543·1	657·00	121·0
'56.....	586	581·4	634·75	109·2
'57.....	948	620·0	698·25	112·6
'58.....	483	628·9	719·25	114·3
'59.....	776	597·0	635·75	106·5
1860.....	670	583·7	683·25	117·0
'61.....	614	551·3	600·50	114·1
'62.....	673	489·8	496·25	101·3
'63.....	445	487·1	440·00	90·3
'64.....	253	440·5	337·25	76·6
'65.....	389	417·4	309·25	74·1
'66.....	262	406·9	360·00	83·5
'67.....	333	388·4	340·25	87·6
'68.....	456	384·7	384·50	100·0
'69.....	310	401·1	428·50	106·8
1870.....	439	393·7	436·50	110·8
'71.....	509	408·9	461·00	112·7
'72.....	488	403·3	455·50	112·9
'73.....	408	386·5	407·00	105·3
'74.....	417	383·9	388·50	101·2
'75.....	315	367·6	355·75	96·8
'76.....	414	336·3	323·50	96·2
'77.....	277	—	—	—
'78.....	288	—	—	—
'79.....	284	—	—	—
1880.....	276	—	—	—
'81.....	196	—	—	—

TABLE XVIII.—*Silk Imports into Great Britain from Japan, in Bales.* (Durant's Circular.) *See Fig.* 17.

Year.	Imports.	Year.	Imports.
1859	555	1870	7,534
		'71	10,807
		'72	8,567
1860	7,771	'73	7,192
'61	8,969	'74	6,773
'62	10,796	'75	5,626
'63	24,694	'76	9,522
'64	11,711	'77	9,297
'65	11,688	'78	6,618
'66	7,433	'79	4,789
'67	7,000		
'68	8,677	1880	4,651
'69	8,750	'81	4,653

TABLE XIX.—*Rate of Discount at the Bank of England, with the Four-Yearly Average. See Fig.* 18.

Year.	Rate.	Four-Yearly Average.	Year.	Rate.	Four-Yearly Average.
1840	5	—	1862	$2\frac{1}{2}$	4·94
'41	5	4·56	'63	$4\frac{1}{2}$	4·81
42	$4\frac{1}{4}$	4·19	'64	$7\frac{1}{2}$	5·94
'43	4	3·63	'65	$4\frac{3}{4}$	5·44
'44	$3\frac{1}{2}$	3·38	'66	7	4·13
'45	$2\frac{3}{4}$	3·69	'67	$2\frac{1}{2}$	3·75
'46	$3\frac{1}{4}$	3·75	'68	$2\frac{1}{4}$	2·78
'47	$5\frac{1}{4}$	3·81	'69	$3\frac{1}{4}$	2·88
'48	$3\frac{3}{4}$	3·63			
'49	3	3·06			
			1870	$3\frac{1}{8}$	3·34
1850	$2\frac{1}{2}$	2·65	'71	$2\frac{7}{8}$	3·72
'51	3	2·77	'72	$4\frac{1}{8}$	3·88
'52	$2\frac{1}{12}$	3·40	'73	$4\frac{1}{4}$	3·97
'53	$3\frac{1}{2}$	3·80	'74	$3\frac{3}{4}$	3·59
'54	5	4·75	'75	$3\frac{1}{4}$	3·13
'55	$4\frac{3}{4}$	5·56	'76	$2\frac{5}{8}$	3·13
'56	$5\frac{3}{4}$	5·13	'77	$2\frac{7}{8}$	2·91
'57	$6\frac{3}{4}$	4·63	'78	$3\frac{3}{4}$	2·94
'58	$3\frac{1}{4}$	4·25	'79	$2\frac{3}{8}$	—
'59	$2\frac{3}{4}$	3·88			
1860	$4\frac{1}{4}$	3·69	1880	$2\frac{3}{4}$	—
'61	$5\frac{1}{4}$	4·13	'81	—	—

Discussion *on* Professor Poynting's Paper.

Before the reading of the paper,

The Chairman (Sir Rawson W. Rawson) said, before Professor Poynting commenced to read his paper he should like to make one or two remarks which might help to guide the members in its consideration. In the first place they must not be led away by a misconception as to the subject of the paper; because, although the paper in the early paragraphs made reference to the periodicity of sun spots, yet it contained no reference to the matter of sun spots beyond that allusion. Secondly, the main object of the paper, which made the Council consider it very desirable that it should be brought before the Society for discussion, was of the discussion of a proposed statistical method of dealing with averages, founded to a certain extent upon a mathematical theory. Professor Poynting, in illustration of the method, had taken up the prices of wheat, cotton, and silk, but his method was applicable to the discussion of any similar matter. The two points he would ask them to bear in mind were, first, the principle of his method, whether it was a correct one, and secondly, whether the periods which the professor had adopted were generally applicable, viz., ten years and four years, or whether different periods ought to be applied to different articles. The information that he had brought together with regard to the prices of wheat, cotton, and silk was most valuable, but the object of the paper was much more important, viz., the discussion of the method which he adopted for the formation of curves in the discussion and comparison of periodicities of various kinds.

Professor Poynting having read his paper:—

The Chairman said the experience of some of the members present, and their acquaintance with the fluctuations of price in the three articles that had been the subject of Professor Poynting's inquiry, would no doubt enable them to offer some very useful comments upon his suggestions; whilst others who had an acquaintance with his theoretical propositions might be able to give useful information either in confirmation of, or in criticism of, the principle which he had suggested—more particularly with regard to the periods of time which he had adopted as a means of comparison.

Mr. Hyde Clarke said he had been greatly interested in the paper brought before them, because, as they all knew, the subject had at various times occupied the attention of the Fellows of the Society, more particularly their late lamented friend Professor Stanley Jevons, as also of Mr. Cornelius Walford, Mr. L. S. Symons, and others. He might be permitted to say that he had himself

been connected with this subject by its initiation, and in the work to which Professor Poynting had referred, and on which his own account was based. Professor Stanley Jevons had stated that he (Mr. Hyde Clarke) was the first who had discovered the ten-yearly period. They had also had the subject before the statistical section of the British Association at Dublin. As he had published the paper on the subject, "Physical Economy," forty years ago, which latterly had had considerable influence in this discussion, he might perhaps refer to the processes which he then adopted, and which went to some extent in confirmation of those referred to at the commencement of Professor Poynting's paper. He did not at that period in any way take into account the theory of sun spots, which afterwards and at the present time had attracted so much attention. He went to work in the method described—with the long series of Winchester wheat prices which were commonly appended to Adam Smith's "Wealth of Nations," and which had the great advantage, as Professor Poynting showed, of extending over a period of centuries, and these he extended and corrected from the chronicles, as Professor Thorold Rogers is now doing on a more complete scale. This had a still greater advantage now than it had when he commenced the investigation, because since that time there had been more disturbing causes as to prices, as to economical events and incidents, than there were in the previous century. Local causes no longer governed the price of wheat, but external causes. He went carefully through the prices, adopting a method like that which Professor Poynting had referred to, and taking out the curves. Having done that, it was evident on the series that there were indications of periodicity; and he endeavoured to ascertain what general law of periodicity there was by trying various periods, and that resulted in the determination of what had been called the ten-yearly period. They must not understand that there was an exact period of ten years in meteorological influences on crops, or economic results; it was generally a practical, though not an astronomical period of ten years, but not exactly. Generally speaking they had a period of financial crises at this distance of about ten years. Within the last few years the attention of astronomers had been more particularly directed to the sun spots; but instead of assisting the economical investigation or the meteorological discussion, it had rather interfered with our obtaining clear results. In all these discussions with regard to sun spots, periods had been laid out almost in some cases like minutes and seconds. When they came to apply such an astronomical epoch to the two sides of India for instance, it was evident that that would indicate nothing of itself; they had, as had been indicated, to consider all the various geographical circumstances which were influenced by the astronomical events, for instance, more particularly the configuration of the country, and then again the times when crops or animals matured. It was by no means the case that all this incidence of crops happened at the same time all over the world. They knew, on the contrary, while they had abundant crops in one country they had famine in another; although there were cycles of greater and of less production in the whole, if we

took into account such geographical incidents as the Ghauts in India, according as the monsoon broke so would the supplies of rain be affected. It had therefore always appeared to him far more important, and in reality more precise, to take the gross result as to the crops than the computed astronomical period. He should however differ from Professor Poynting, who had gone beyond the crops and taken in the imports, including silk in this market and cotton, which were less directly connected with the other phenomena of crises. If they wanted to get at the mean result, to ascertain what was an economic law such as he had propounded, that from time to time they were liable to periods of abundance and to periods of scarcity, which influenced the economical and political condition of the world, they must take it in the whole in a practical shape, and not attempt to define and refine too much. In carrying out curves say of four centuries of prices of wheat, they found in many cases that the ten-yearly period would sometimes coincide for fifty or sixty years together, the maxima and the minima falling very nearly in the same places period after period. When they came to arrange the whole of those periods, however, they would find that when they thought they had obtained a law which would enable them to predict maxima and minima, and when there was to be a good harvest, and when there was to be a famine, if they applied that to some other period a maximum was replaced by a minimum, or a minimum was replaced by a maximum. It therefore always appeared to him—and Professor Jevons in the last letter he had sent expressed his concurrence—that it was the interference of the larger cycles, and Professor Balfour Stewart appeared now to recognise these, which would prevent them from predicting so readily as some persons thought what would be the incidents of agriculture and industry all over the world, or in any one region. They would see at once that if there were periods of ten years, and they introduced among them cycles for instance of twenty-six or twenty-six and a half years, or say of tenth years, of which he had seen evidences, these would not coincide, and therefore it would always be beyond their power absolutely to predict what the result would be. There was another caution he would throw out with regard to the influence attributed to sun spots. He did not suppose there was any philosopher who imagined that these sun spots were the real influencing causes as to deficiency of harvests, but rather indications, even after allowing for all the cosmic influences of the sun. It was much more reasonable to suppose that these themselves were but manifestations of some great cosmic laws influencing the whole universe, with whose existence they became more familiar every year by the progress of discovery. He had made these observations rather for the purpose of simplifying the subject and of illustrating what Professor Poynting had said. He believed that these considerations had exercised material influence upon Professor Jevons; for at one period he certainly thought that he had got the whole process in his hand, and he laid down a doctrine that by watching the prices at Delhi, it would be almost possible to tell what would take place in this country. Professor Poynting had called their attention to

various causes which must limit their deductions—there were economical incidents to be regarded, and there were events of war; they must therefore be particularly careful in not stretching their knowledge too much, or supposing that they had too valuable a piece of economic machinery in this process, which had deservedly attracted the attention of so many eminent men of science.

The Chairman said he would interpose one observation in order to prevent the discussion getting into a wrong groove. Professor Poynting did not suggest that there were periods, or cycles, of prices, or of anything similar. He had merely adopted a ten years' period for forming an average, in order to establish a curve for the examination and comparison of periodicities of every kind, and did not suggest that there were periods, or cycles of prices, or anything else. He wished to point that out because Mr. Hyde Clarke's remarks had to some extent been founded upon the idea that the professor had adapted cycles of ten years.

Mr. Hyde Clarke said he had not endeavoured to put that into the mouth of Professor Poynting, but as the professor had referred to the labours of Professor Stanley Jevons, he felt it well to put clearly before the Fellows what he himself had understood on that subject, which had been a matter of considerable misapprehension.

Mr. Stephen Bourne said they were all very much indebted to Professor Poynting for the industry displayed in preparing the tables, and the courage with which he had propounded a new theory for their investigation. He had hoped to have heard one or two gentlemen who would have supported the conclusion at which Professor Poynting had arrived, in order that if possible the clouds which obscured his (Mr. Bourne's) brain might have been cleared away; for he frankly confessed that he differed *in toto* from the conclusions at which the learned professor had arrived. In the first place, he would take exception to the data on which his observations were founded; for any attempt to reconcile discrepancies between such an extreme range of prices as they found in the tables given was quite impossible. In the Delhi table in the year 1783 the price of wheat was 167 rupees, and fifteen years afterwards, in 1798, it was 8 rupees. There must have been disturbing causes in existence then which by no conceivable stretch of imagination could be referred to any principle of periodicity, and how any attempt could be made to bring those into a system he could hardly conceive. Then with regard to the physical relation of the sun to the earth, he should like to draw attention to the utter irregularity in the rise and fall of prices in Delhi and England. In the year 1783 the price at Delhi was 167 rupees, and in the same year the price in England was 54·3*s.* The lowest price at Delhi was in 1798, when it was 8 rupees, and in England in the same year it was 51·8*s.*; showing scarcely any variation between the two years in England. Again, if they took the highest English price, in 1812 it was 126·5*s.* and in Delhi it was 44 rupees. There was therefore no conceivable relation whatever between the gradations of prices in Delhi and

in England; and if this periodicity was due to any solar influence, he could not conceive it possible that there would be such a wide difference between the two countries. He was neither a mathematician nor a musician, and was unable to follow the professor in his very learned disquisition upon the subject of harmonics; but it did not appear to him that the two things were at all comparable, because they had in the case of wheat and other products a number of disturbing influences coming in, and they could hardly say that the solar or meteorological influence could be eliminated from the other disturbing causes. The process of averaging them was just a mingling of the irregularities all together, and so destroying their identity. He should like to take exception to the principle of averaging altogether. The ten years and four years were admittedly entirely arbitrary periods. If any others were selected the effects were very divergent, and showed that there was no concord between the results arrived at from taking different periods. Looking at Diagrams 20 and 21, they would see in 1865 the curve was a long way below the mean in Table XX, and it was on the mean in XXI. They would find the same difference again in the year 1806; and in fact a very simple inspection of the curves displayed would show that there was no congruity between them. If the theory advanced was at all sound, it did not depend upon the arbitrary selection of periods, but there ought to be something like a regularity of gradation between them. Taking the highest year in the Delhi prices (1783, when wheat was fetching 167 rupees), he had worked it out upon two systems. If the ten years was adopted he thought it would be better to take the five years before and the five years after the year with which the comparison was instituted, and to leave out that particular year altogether. He had accordingly taken it in that way, and again calculating it including that year had taken the eleven years, which brought the particular year in question into the centre of the period. The tables showed in the year 1783 at Delhi a ten-yearly average 52·4, and a four-yearly average 81; the percentage of the four years upon the ten years being 154·5. If they took the ten years, that was, the five years before and after 1783, they would get a ten-yearly average 38·2; a four-years' average of two before and two after 52·3, with a percentage 137. If they took the eleven years including 1783, they would get a ten-yearly average 50; a five-yearly average 75·6; and a percentage 152; so that they found there was no congruity at all in the rise or fall for those periods. Then taking the year 1798, they had a ten-yearly average 23·5; a four-yearly average 15·5; and a percentage 66. Taking the ten years excluding 1798, they had a ten-yearly average 28; a four-yearly average 17; and a percentage 60; and taking the eleven years including 1798 they had 26·3, 15·2, and a percentage 57. In the one case therefore the ten-yearly average fell from 28 to 26·3, while the percentage varied from 60 down to 57. He could not help thinking if the principle of averaging at all held good, they ought to obtain, not perhaps the same absolute results whatever periods they adopted, but at any rate the same sequences or the same gradation. These results seemed to be so utterly out of keeping with any gradation or periodicity,

that he could not help thinking the system was useless in comparing a set of figures depending upon a number of disturbing causes which did not follow according to any fixed rule. He could not see what they gained by getting out these averages, except that they flattened down all the disturbing influences and so reduced them to a nearly dead level, destroying altogether the value of any comparison between the one and the other. It would no doubt be thought rather bold on his part to attempt to attack a principle laid down by so eminent an authority, but looking at it from an economic and not from a mathematical point of view, what he failed to see was the value of the result said to be arrived at. He should be very happy indeed if his misconceptions or doubts upon the subject could be removed.

Mr. H. Moncreiff Paul said notwithstanding the great amount of research and learning which Professor Poynting had brought to bear upon this question, he must follow on the same side as Mr. Bourne, inasmuch as it was not possible by mathematical precision to bring out results which apparently true in theory would coincide with actual facts. The professor had selected three articles of produce for comparison with respect to their prices and quantities, and came to the conclusion that wheat and cotton did not go together with respect to prices, in other words that when wheat rose cotton fell, but that cotton and silk were somewhat more harmonious *quâ* price. These conclusions were not verified by the quotation of those articles at various periods as given in the tables annexed to the paper, and that they could not be in accord seemed evident if regard was paid to the conditions by which those prices were regulated. Wheat might have conditions regulating its prices the same as the conditions which regulated the prices of cotton and silk, but it might also have conditions which did not apply to either of those articles. For example they might go back to a point where if Professor Poynting were right the high price of wheat ought at the same time to be exhibited in the inverse direction in cotton; but they found that this was not so, and why? because the comparison happened to be made at a time when there was no free trade, and the price of wheat was very much higher in this country by reason of the absence of large foreign or colonial supplies coincident with bad domestic harvests; while the price of cotton, unaffected by such influences, was not by any means low. When comparing cotton and silk the author of the paper had said that these ought to go in harmony, but it was found that whereas on some occasions they might do so, on others they did not; the reason being that at one point of time cotton might not have had a competitor through any other article displacing its consumption, and so the demand might have been greater and the price consequently higher. But this had not always been the case, for wool had interfered to a considerable extent in the consumption of cotton, and therefore the price of cotton had declined while that of wool had risen. That article had also had an effect upon the price of silk; and thus they found a law coming into play the force of which was not recognised in the paper—the law of displacement

by the use of other materials, and this naturally affected prices. Again, the difference in the course of prices of wheat ruling in England and India might simply be owing to increased facilities of transport. It was well known for example that Indian wheat had never ruled so low in this market as it did at present, and this was so not because of a decline at the point of production but by reason of railway extension and consequent diminished cost of transit. The remark thus made with respect to Indian wheat might apply to wheat from other parts of the world. Therefore before they could accept any comparisons by average of different articles of produce at various times of periodicity, it was necessary to observe the following conditions, viz., those of crops or harvest, of demand and supply, of facility and quickness of transport; and they must also see whether there was any process of displacement going on whereby one article was put out of use by another, through change of fashion or diminished cost, taking its place.

Mr. H. T. W. Elliott said the key note of the paper was contained in the concluding words of Sections II and IV, where the author said, "we are driven then to conclude that the three series of fluctuations are all effects of one common cause, and this probably a nearly simultaneous fluctuation of the seasons, giving rise to good or bad harvests at about the same time in widely distant parts of the globe;" and also, "the two sets of fluctuations seem then to be due to a common meteorological cause affecting the whole globe simultaneously, and in such a way that good corn seasons are bad cotton seasons." This theory of common meteorological conditions affecting the yield of both corn and cotton was worth working out, but no conclusion could safely be drawn merely from a comparison of price. Price was liable to so many fluctuations and was dependent upon so many causes that he would prefer to see the argument supported by a comparison of actual yield. They knew for instance that the English yield of wheat for the last five years had been deficient but the price had been low in consequence of the increased supplies from America. Price was dependent not only upon supply but upon variable demand, and there was another element, viz., the appreciation of the standard by which it was measured. It had been recently pointed out by Mr. Göschen that prices might be said generally to be lower on an average than they were ten or twenty years ago; this was an important element, and showed that any attempt to establish theories of common meteorological condition would be based with greater safety upon the actual yield rather than upon a comparison of price.

Mr. Rowland Hamilton said he had for a long time taken very great interest in the question of averages which Professor Stanley Jevons had discussed with so much acuteness, and most highly appreciated the thoroughness with which all his work was done, but he seemed hardly to have adequately realised the extreme complexity of the data which had to be dealt with in such inquiries. The state of commerce was subject to so many fluctuating influences

that it was extremely difficult to estimate the weight to be attached to each. Prices moreover were not the effect of material causes, but of the opinions often of necessity somewhat hastily formed upon the effect of those causes. Looking at the past history of silk and cotton, it was impossible to attribute the great fluctuations referred to in those articles severally to a common cause. It was soon after 1850 that the disease among silk worms began to spread all over Europe and into Asia Minor. That was met only partially by supplies drawn from Asia and especially from China, where there was already a large production of silk. The rise in cotton resulted from an entirely different cause, viz., the civil war, which as is well known altogether subverted the system under which labour had been applied to the cultivation of it. Results springing from such very different causes could not be assigned to the action of any common law. Again, Sir Robert Peel had urged that it had been found that a deficiency in the crop of wheat in one part of the world was always compensated by excess in another. But though many inequalities were thus adjusted, it had not by any means been demonstrated that the aggregate production was not affected in some seasons by causes affecting the whole world; such as for instance a temporary excess or diminution of solar energy. In dealing with a question so complicated and obscure, an historical inquiry into the nature of the causes affecting prices was indispensable.

Major Craigie said he could not help agreeing with Mr. Bourne that although the mathematical system of averaging suggested in the paper was both interesting and theoretically complete, still it did not exactly suffice for the peculiar series of facts intended to be grouped, and did not sufficiently bring out the variations that they wished to ascertain. Mr. Hyde Clarke had told them to bear in mind the different geographical conditions of the various countries, but they must also remember it was not the weather of the year that affected the wheat crop so much as the weather of three or even two months, and these months were different in different places. That was a matter to be considered in comparing the produce of wheat with the meteorological conditions of any given year. If they could have a series of figures constructed wholly of ascertained produce obtained by reliable returns from different places it would be infinitely superior to any money standard of actual prices. It was satisfactory to the Society that the Government were about in this country at last to rectify the omission on which he had felt it his duty to comment in January last, and to attempt to have some official record of the wheat produce of the United Kingdom and that of other cereals. Professor Poynting could not he knew obtain yet the data to determine the actual produce of the past, but when the Statistical Society met one hundred years hence, as he hoped it would do, to discuss and elaborate such figures as they had been discussing that evening, they would doubtless possess a far better basis from which to compile any averages, namely the actual produce in different parts of the world.

Mr. JOHN B. MARTIN said as an official of the Society it was hardly to be expected that he should interfere in a debate, and as a rule he abstained from doing so. He would however venture that evening to say one word on the subject of the paper. The concluding paragraph was the most formidable in appearance to his non-mathematical mind, but the curves which Professor Poynting had drawn on the black board showed that he could evolve order out of that which at first sight had the appearance of something very like chaos. Mr. Bourne had attacked the problem from the economic point of view, and though it was perfectly easy to show by Professor Poynting's system of averaging that whether he started from a period of ten or four years, he could by adding and subtracting the plus and minus quantities arrive at zero, Mr. Bourne was not satisfied with that because it did not give him the value in definite prices of an average in the period. That brought him to the one point on which he had risen to speak, namely, what was an average? Whether they took wheat, or silk, or cotton, or anything else, what was it that they were starting from? That was a problem which he had never yet been able to think out straight. If they asked a farmer what sort of a harvest he was having, he would say "pretty middling," or "an average," but if they asked him what he meant, he would certainly be unable to satisfy them. When they went back to a period of years they got into a further difficulty, for 40*s.* or 80*s.* a quarter as it might have been at the beginning of the century was not the same as 40*s.* or 80*s.* now, while a different system of cultivation had caused the production of the soil under similar conditions of climate and seasons to be different now to what it was two or three generations ago. Mr. Elliott had referred to Mr. Göschen's examinations into the variations of general prices, but he (Mr. Martin) ventured to think that Mr. Göschen's case was not fully made out, and that the point of departure which Mr. Göschen had selected as his starting point was not altogether happily chosen. The system of averaging therefore for the purposes of economical practice was as far as he could see totally different from the system of averaging bases which commended itself to the mathematical mind. Major Craigie hoped that one hundred years hence they would have a wider base and would get a better system of averaging, but if he (Mr. Martin) were still alive, he was afraid he should still have to put the question "What is an average?"

Mr. EDWARD POWER thought that the conclusions at which Professor Poynting had arrived were scarcely in accordance with general experience. It was common experience that good or bad harvests were not simultaneous throughout the world, and it was well that they were not so; they were much better situated than they used to be for the equalisation of food prices, because in consequence of increased means of transport the produce of other countries was now more available to supply any deficiency at home; and practical experience showed that a bad harvest in one part of the world was largely compensated by a good harvest in another.

Professor POYNTING in reply said it had been insisted upon that the yield ought to be taken as the indication and not the price. In fact he had only taken the price in the case of wheat: the other curves were all curves of actual amount in bales of cotton and silk, and in order to get the actual amount of crop as far as possible he had attempted to equalise the weight of bales. He had of course to proceed upon the assumption that the English import did to some extent represent the crop. As to the price of wheat he had endeavoured to connect that with the crop. He had only been able to get the English crop curves for thirty years, but it would be seen on comparison that really the price did fluctuate very closely with the crop through that period. As to the process of averaging, he did not originally look at it mathematically, for he had written the whole of the first part of the paper long before he wrote the concluding note on the mathematical process. In fact Professor Stokes pointed out what the mathematical process really was, and the note at the end was taken almost word for word from his letter. The process was tolerably straightforward. He defined the ten-year average as being simply the mean of ten values, and doing that they found as a matter of fact that it smoothed the curve down to very nearly a straight line as a standard, and the four-yearly average gave the fluctuations above and below this line. The economic conditions such as the law of displacement did not up to this point appear to affect the question. There were the curves, what were they to make of them? If their similarities could be explained by the law of displacement, then his meteorological theory must go to the wall.

The CHAIRMAN said whatever their opinion might be as to the theory put forward by Professor Poynting, they would all acknowledge the remarkable industry he had displayed in preparing this paper for their consideration, and also its general value in the discussion of this most important question of averages, and the comparison of periodic influences, commercial, meteorological, and social. He was therefore sure that he would only be interpreting their sentiments in conveying to Professor Poynting their best thanks for the paper he had read to them.

Electoral Statistics: *a* Review *of the* Working *of our* Representative System *from* 1832 *to* 1881, *in view of* Prospective Changes *therein.*

By John Biddulph Martin, Esq., M.A.

[Read before the Statistical Society, 19th February, 1884. The President, Robert Giffen, Esq., LL.D., in the Chair.]

CONTENTS:

	PAGE
I.—Introductory	75
II.—Historical Sketch	76
a. The Distribution of Seats	76
β. The Electorate	78
III.—The Present Position and the Conditions of the Problem	82
a. England and Wales	82
Deductions on account of—	
1. Lunatics, &c.	83
2. Paupers	83
3. Criminals	84
4. Aliens	84
5. Deductions from Apparent Total of Electors	84
β. Ireland	88
IV.—Conclusion	92
Appendices.	
A to D	94

I.—*Introductory.*

It will be conceded that the present time is eminently opportune for bringing under the notice of this Society facts and figures relating to the representative system of our country. A little more than fifty years have elapsed since that system was laid down on its existing principles: it is almost exactly fifty years since the Statistical Society was founded for the purpose of "the careful "collection, arrangement, discussion, and publication, of facts "bearing on and illustrating the complex relations of modern "society in its social, economical, and political aspects." In spite of the exclamation of the poet—

> "How small, of all that human hearts endure,
> That part which laws or kings can cause or cure!"

good government is generally held to be directly contributory to the general happiness, and next after the pursuit of wealth there is

perhaps no subject that commands greater attention and interest than that which under the comprehensive style of "politics" embraces not merely party questions, but every topic relating to the government of the country. Representation may be said to be the foundation stone and the key-stone of our political fabric, and our representative system is naturally the theme of constant consideration and criticism.

Our Society has not been backward in its recognition of the importance of the subject, and of its claims to investigation: our first volume has a note on the electoral statistics of the time, and the field of the present inquiry has been worked in already more than once. In 1857 and again in 1859 the late Mr. William Newmarch elaborately reviewed the electoral statistics of the preceding twenty-five years; in 1874 I was permitted to lay before the Society a comparison of the elections of 1868 and 1874; a year ago Mr. Arthur Ellis submitted a comparison of the electoral statistics of 1871 and 1881. Mr. Thomas Hare, working on another branch of the subject, laid before us in 1860 a paper on the theory of representative elections. Mr. Droop in 1881 contributed to our *Journal* an essay of similar nature. [See Appendix C.] The scope of the present paper is distinct from that of the two last mentioned writers, but I may at once acknowledge my indebtedness to those who, either as contributors to our *Journal* or otherwise, have gone before me, by whose labours in the collection and grouping of statistics my own have been lightened, and from whom I have perforce occasionally borrowed.

On one point I hope to follow closely the example of Mr. William Newmarch; namely, in laying down to myself the law that whatever be the opinion of the writer, his paper should be neutral and colourless. I purpose to limit myself to first a very brief historical account of the changes which fifty years have brought about in our representative system, and next to a contrast of the present state of that system with the epoch from whence the inquiry starts, as foreshadowing the course which events may be reasonably expected to follow in the future.

II.—*Historical Sketch.*

α. The Distribution of Seats.—The Reform Act of 1832 restored to the House of Commons the character of a representative assembly, a character that it had altogether ceased to deserve. Its operation, so far as regards the redistribution of seats, may be shown tabularly thus:—

Seats Lost.		Seats Gained.		
Boroughs—		*Boroughs*—		
England—		England ..... 22 @ 2 each (Schedule C)	44	
55 @ 2 each = 110		19 @ 1 each (Schedule D)	19	
1 „ 1 „ = 1		Wales..... 2 @ 1 each....	2	
(Schedule A)	111	Scotland..... 8 „ 1 „	8	
30 @ 1 each = 30 (Schedule B)	30	Ireland ..... 4 „ 1 „	4	77
		Universities—		
		Ireland		1
Weymouth and Melcombe-Regis (amalgamated)	2	*Counties*—		
		England ..... 25 @ 2 each (Schedule F)	50	
		7 @ 1 each (Schedule F 2)	7	
		Yorkshire..... Lincolnshire .. 2 @ 2 each	4	
		Isle of Wight	1	
		Wales ..... 3 @ 1 each	3	
				65
	143			143

After this sweeping measure the constituencies remained undisturbed until the second Reform Act of 1867, save for the reallotment of the seats forfeited by Sudbury and St. Albans. By the latter Act 4 boroughs were totally, and 42 half disfranchised, 11 new boroughs were created in England, and 2 in the metropolis; 1 seat was attributed to London University, and 25 seats to 13 English counties. In the following year (1868) 11 seats lapsed owing to corruption in 9 English boroughs, of which 7 only were reallotted under the Scotch Reform Act of 1868, viz., 1 each to the Universities of Edinburgh and Glasgow, 3 to boroughs, and 3 to counties (Selkirk and Peebles at the same time losing one member by consolidation). Save for the forfeiture of the two seats of the boroughs of Sligo and Cashel, no change has taken place in the balance of representative power in Ireland; the franchise in Ireland has indeed been subject to alteration, but with this we are not at the moment concerned. In Appendix D will be found a chronological statement in full of the changes which have thus been briefly referred to, and which may be summarised thus:—

Seats lost, 1832-81, counties	1	
„ boroughs	62	
		63
Seats gained, 1832-81, counties	31	
„ boroughs universities	26	
		57
Net loss		6
Total seats, 1881		652
„ '32		658

These changes may be presented tabularly in another form and in greater detail,* thus:—

TABLE 1.—*Showing Seats Gained and Lost by Counties, Boroughs, and Universities*, 1832-81.

	Counties.		Boroughs.		Universities.		Total.	
	+	−	+	−	+	−	+	−
England and Wales	28		20	60	1		49	60
Scotland	3	1	3		2		8	1
Ireland				2				2
Total	31	1	23	62	3		57	63

β. The Electorate.—It is evident from the historical facts briefly touched on in the preceding remarks, that the period of forty-nine years that we have under review is divisible into two unequal

* Subjoined is a table, taken in great measure from the very interesting paper contributed by Mr. Benjamin Whitworth to the Manchester Reform Club Debating Society in 1876 (William Porter and Sons, Manchester), wherein these changes are numerically shown thus:—

TABLE 2.

	1832.	1833.	1868.	1881.
England—				
Counties	82	144	172	172
Universities	4	4	5	5
Boroughs	403	323	286	281
Total	489	471	463	458
Wales—				
Counties	12	15	15	15
Boroughs	12	14	15	16
Total	24	29	30	31
Scotland—				
Counties	30	30	32	32
Universities	—	—	2	2
Boroughs	15	23	26	26
Total	45	53	60	60
Ireland—				
Counties	64	64	64	64
Universities	1	2	2	2
Boroughs	35	39	39	37
Total	100	105	105	103
Grand total	658	658	658	652

See also Table A 5.

parts: viz., the thirty-five years 1832-67, the fourteen years 1867-81. The break in continuity caused by the Act of 1867, affecting as it did not only the distribution of seats, but also the franchise, prevents us from comparing directly the years 1832 and 1881. With modifications that have been made in the electoral qualification for counties or boroughs it is not proposed here to deal, and the occupation franchises into which Mr. Newmarch elaborately examined have for us but an historical interest. Yet in dealing broadly with the changes that have taken place in the population and the electoral body of the realm, it is necessary not to ignore this intermediate point of new departure, and to select as a middle term some point of time on this or that side, or both, of the Act of 1867, for the purposes of comparison with 1832 on the one hand, and 1881 on the other. The rapid growth of our large cities (represented during the decade 1871-81 by an increase of 21,000 electors in the county of Lancaster alone) renders it desirable that this middle term should coincide as nearly as may be with the decennial census, and as the addition of a fourth column of population and electors would have made the tables of Appendix A still more voluminous than they are, I decided on selecting the year 1861 as my intermediate point for the purposes of these tables.

If we briefly summarise the evidence afforded by the totals of 1832 and 1862, we see at once the gravitation of population towards the boroughs throughout the United Kingdom, the relative variations showing as follows:—

Table 3.

	1832.	1861-62.	
	Population and Electors.	Population.	Electors.
Counties—			
England and Wales	100	133	144
Scotland	100	121	150
Ireland	100	71	289
Boroughs—			
England and Wales	100	165	182
Scotland	100	144	166
Ireland	100	108	106

Thus in both England and Scotland the number of electors on the registers has more than kept pace both in counties and boroughs with the population. Ireland, however, presents, not for the first time, anomalous features: a small relative decrease in the electors of boroughs being recorded, while on the other hand there is an enormous increase in the electors on county registers, a phenomenon of which no explanation seems apparent.

Before passing to the consideration of the Act usually spoken of as the Reform Act of 1867, we may briefly glance at the result of the labours of the Boundary Commissioners, which bore fruit in the "Boundary Act" of 1868. By this Act the boundaries of 59 existing boroughs in England, and of 10 existing Welsh boroughs were enlarged. The alterations effected in the case of English boroughs were not on a very radical scale, the total area of the 59 boroughs being enlarged from 421·2 square miles to 500·7 square miles, or say a total increase of 18·7 per cent. The alterations in the Welsh boroughs, from their general character as district boroughs, were more sweeping, but owing to the absence in several instances of boundary maps in 1832, the increase of area is less easily ascertainable. In the aggregate of cases that are comparable the increase is 62 per cent. A more considerable change was effected by constituting as boroughs the important constituencies of Burnley, Chelsea, Darlington, Dewsbury, Gravesend, Middlesborough, Stalybridge, Stockton, and Wednesbury, with an aggregate area of 73¾ square miles, and a population and electorate (in 1881) of 838,850 and 100,833 respectively; to the depletion, *pro tanto*, of the electoral strength of their respective counties.

But the effects produced by the redistribution clauses of this Act were of small account as compared with those brought about by its franchise clauses, the number of electors on the registers before and after the passing of the Act showing the following very considerable contrasts:—

TABLE 4.

	Counties.		Boroughs.*	
	1865-66.	1869.	1866.	1869.
England and Wales ..	542,521 †	791,916	458,368	1,167,473
Scotland	49,979 ‡	76,077‖	53,498	149,134
Ireland	172,010 §	170,460‖	31,721	45,524
	764,510	1,038,453	543,587	1,362,131

* Parl. Paper, No. 381 of 1874. Mr. Butt. † Dod, 1866.
‡ Parl. Paper, 3651 of 1866. § Parl. Paper, 448 of 1865.
‖ Parl. Paper, 388 of 1879.

The figures of this table, both as regards the increase of county and borough electors at the two periods, and the relative increase of borough electors as compared with those of the counties, may be left to speak for themselves. It must however be borne in mind that in the case of Ireland no alteration was made in the county franchise by the Irish Reform Act of 1868, while the borough

franchise was reduced from an 8*l.* to a 4*l.* qualification only. The dates above cited, and the figures corresponding thereto, may serve as stepping stones between the two extreme points of our course, viz., the years 1832-81, and we may now compare the figures afforded by the returns of these years, and set out in detail in Table A, and summarised in Tables A1—A7. Table A2 renders more easily comparable the bare figures given in A1, by reducing them to two places of decimals, in other words to the percentage of every 10,000 inhabitants. We see herein that for every 10,000 souls there was an increase in the English counties of 319, and in English boroughs of 1,346; a small decline of 27 in Scotch counties, but an increase of 113 in Scotch boroughs; the whole of this net increase of 1,751 being at the expense of Ireland, in the proportion of 1,702 in the counties, and 49 in the boroughs.

In Tables A3 and A4 the number of electors on the registers at the two periods are similarly treated, and we find a notable transfer of electoral power from the English counties to the boroughs; in Scotland the same effect is produced in a less marked manner, the net gain in both these divisions of the kingdom being again at the expense of Ireland. But the total gain or loss in each of the three countries is much less than the gain or loss in gross population, as will be more readily apparent from the following tabular statement:—

TABLE 5.—*Showing the Increase or Decrease in the Total Population, and Number of Electors per Ten Thousand in England and Wales, Scotland and Ireland respectively from* 1832-81.

	Population.		Electors.	
	Increase or Decrease.	Net Increase or Decrease.	Increase or Decrease.	Net Increase or Decrease.
England and Wales—				
Counties	+ 319		− 1,524	
Boroughs	+ 1,346		+ 1,710	
Universities			− 14	
		+ 1,665		+ 172
Scotland—				
Counties	− 27		− 93	
Boroughs	+ 113		+ 269	
Universities			+ 39	
		+ 86		+ 215
		+ 1,751		+ 387
Ireland—				
Counties	− 1,702		− 199	
Boroughs	− 49		− 174	
Universities			− 14	
		− 1,751		− 387

Table A6 shows in detail as regards England and Wales the increase in the total population and number of registered electors at such periods between 1882 and 1881 as are available for comparison. Unfortunately the Census Returns of 1841 do not distinguish the population of the registration districts in the manner which is now the case, and the table is so far incomplete. It appears that the population of the counties in 1881 was nearly as large as that of the entire kingdom in 1831, but the urban population having in the same interval much more than doubled itself, it is now approaching in volume to that of the rural districts; so that whereas in 1881 the rural population was to the urban as 100 to 60, it is now in the proportion of 100 to 89·5 only. As regards the number of electors it will be seen that this increased during the thirty years 1832-62 rather faster than did the population, the increase of electors being 54 per cent. as against an increase of 44 per cent. of population; but owing to the Reform Act of 1867 the county electors increased during the following decade by 50 per cent., and its borough electors to 166 per cent.

Finally, in Table A7 is shown the population of the rural and urban inhabitants and of rural and of urban electors in every 100 of the respective totals at the same date; from this table the dwindling importance of the counties, and the growing preponderance of the boroughs is seen at a glance.

III.—*The Present Position and the Conditions of the Problem.*

The inquiry has now been brought down to the present time, and we are in a position to survey the state of affairs to which the lapse of fifty years has brought us, as well as to consider what is before us, and the probable effect of any alterations in the electoral system. The difference in the social phenomena presented by the different divisions of the realm, as well as their dissimilar laws, constitutional rights, and disabilities, renders it desirable to treat of them separately, and especially so as regards England and Ireland. The field of inquiry is a large one, and one in which it is equally difficult to be assured that exploration has been complete, or that the survey, so far as it is carried, has been correct; it is therefore permissible to express at the outset my sense of the imperfect manner in which, with every intention of being painstaking and accurate, I have succeeded in dealing with so intricate a matter as the one under consideration.

α. *England and Wales.*—We have seen from Table A1 that the total population of England and Wales consists of 25,960,276* souls, or (according to the slightly differing total of the Census Report) of 25,974,439, made up of—

* From "Parliamentary Reformer's Manual."

Males over 20 years.....	6,643,167	= 25·6	per cent.
„ under 20 years	5,996,735	= 23·1	„
Females	13,334,537	= 51·3	„
	25,974,439	= 100	„

this total of over six millions and a half of adult males having apparently (Table A 3) among their number 2,537,810 (say 38 per cent.) of registered electors. But these gross totals are subject to considerable modification before we can arrive at an approximate estimate of the true total in each case. From the total adult population we have to deduct those who are in any way incapacitated from the exercise of civil rights; that is, those who are mentally, socially, or legally, disqualified: the (1) lunatic, (2) paupers, (3) criminals, and (4) foreigners.

(1). From the Census Returns of 1881 (General Report, vol. iv, p. 67) it appears that in England and Wales 39,789 males were recorded as lunatics, idiots, or imbeciles, of whom there were of the age of 20 years and over 33,958 (Census Returns of 1881, vol. iii, Table XVIII). Of this number 20,205 (=59·5 per cent.) are returned as lunatics, and 13,753 (=40·5 per cent.) as idiots and imbeciles. But while the former total is taken as fairly accurate, the latter is subject to very considerable modification, chiefly owing to the natural reluctance of parents or relatives to make a true return in this particular, especially in milder cases. Following then the calculations of the census report, we must add 9,527 unreturned imbeciles, making a total of 43,350 adult males labouring under mental disability.

(2). In estimating the number to be deducted from the total population under the head of paupers there is always an element of uncertainty, since the total number in receipt of relief at any one date is naturally very far from representing the number of persons relieved during a period of twelve months. From the Report of the Local Government Board (1882-83, p. xvii) we find the following figures:—

TABLE 6.—*Showing Mean Number of Paupers and Adult Male Paupers in England and Wales*, 1881-82.

	Year.	In-door.	Out-door.	Total.	Per 1,000.
Mean total	1881	183,872	607,065	790,937	30·0
	'82	183,374	604,915	788,289	30·0
Mean of adult males	1881	22,516	82,485	105,000	4·0
	'82	22,251	79,957	102,208	3·9

But from the total at any given date a deduction of about 14·5 per cent. must be made in respect of lunatics and idiots

already taken into account, so that after making this allowance from the mean total of the two years, an average remains of 88,582 to represent the adult male recipients of public charity. It is evident that good or bad times, fine or rigorous seasons, &c., would considerably modify this estimate. Whatever the total arrived at as the average number of paupers at any one time, it evidently does not represent the number of persons relieved during the year. Any receipt of charitable relief would presumably under any circumstances be held as a temporary disqualification, and we must take the usually received estimate of three times the *average* number as representing the *total* number of persons annually relieved. Assuming this calculation not to apply to pauper lunatics, whose pauperism would naturally be more permanent, we have a total of 265,746 adult males other than lunatics who are annually relieved from public funds.

(3). From the Report of the Commissioners of Prisons, 1881, it appears that on 31st March in that year there were in the local prisons of England and Wales, of 14,089 male prisoners, 10,777 males of 21 years and over; and if we assume a similar ratio to exist among those discharged from prison during the year, we must add 99,735 to this number, making a total of 110,502 adult males under legal disqualification in respect of sentences of imprisonment. It is less easy to estimate from the Report of the Directors of Convict Prisons the number of adult males who, being under sentences of penal servitude, or released on licence or under police surveillance, would be disqualified from civic rights; but from such data as are available, and making such allowances as have been suggested to me, the number can hardly be less than 9,000. This forms, with the total given above, what we may call for the purposes of the present inquiry a criminal class of 119,502.

(4). From the Census Returns of 1881 (vol. iii, summary, Table XII) it appears that the number of adult male European foreigners enumerated was 55,097, and if we may assume a similar ratio in the case of foreigners other than Europeans (whose ages are not tabulated), of whom more than 90 per cent. are from the United States, the total of adult male aliens will be 64,057.

It must also be borne in mind that there is always a certain, or more properly an uncertain number of men, who from insufficiently long residence, negligence on their own part or on that of election agents, want of fixed abode, &c., are not registered as electors, and the apparent proportion of unenfranchised male citizens relatively to their total number is subject to further reduction.

(5). If we now turn to the number of registered electors, it is evident that the gross total is subject to revision, in order that we may take into account the holders of duplicate qualifications. These

duplicate qualifications, within the limits of a single constituency, whether county or borough, and arising either naturally in respect of separate qualification or from ancient rights, are ascertainable with comparative ease. But it is no less easy to imagine the interminable cross-examination of registers that would be necessary before arriving at an exact statement of the holders of qualifications to vote in different constituencies; of these the reverend gentleman lately quoted by Mr. Bright as holding twenty-four votes, and exercising seventeen at the last general election, may be cited as an extreme instance. Mr. Newmarch in 1852 (*Journal*, June, 1857, p. 175) estimated that from the then total of 920,000 county and borough electors a deduction of 6 per cent. was necessary in order to arrive at the total number of *persons;* but it is natural to suppose that the percentage of holders of duplicate qualifications among the large class enfranchised by the Act of 1867 would be comparatively insignificant, while the ancient right voters are necessarily diminishing in number. It is estimated that at the present time a deduction of 10 per cent. should be made from the total county register, and not more than 1 per cent. from the borough electorate.

The estimated deductions from the gross number of adult males and of registered electors may now be summed up thus, in round numbers :—

TABLE 7.—*Population.*

Adult males		6,643,000
Less lunatics, idiots, &c.	28,000	
,, ,, (paupers)	15,000	
,, paupers (other than lunatics)	266,000	
,, criminals	120,000	
,, aliens	64,000	
		493,000
		6,150,000
,, adults 20—21 years = 3 per cent.		184,500
Net total males 21 years and over		5,965,500

TABLE 8.—*Electors.*

Total number of electors on register, 1881		2,537,810
Less university electors		13,499
County electors	932,860	2,524,311
Borough ,,	1,591,451	
Less 10 per cent. county electors	93,286	
,, 1 ,, borough ,,	15,914	
		109,200
Total number of persons on registers		2,415,111

and we find that of the net number of adult males 40·48 per cent., or rather more than two in every five, are at present registered as electors. Comparing this percentage with that of 18·33 per cent. as estimated by Mr. Newmarch in 1857 (an estimate that must be raised to 20·63 if allowances and deductions be made similar to those of the present paper), it appears that the electoral body has now almost exactly twice the importance (relatively to the total adult male population) that it had twenty-five years ago.

We have now arrived at the conclusion that of the whole adult male population, 60 per cent., or three out of five, are at present without electoral rights. The changes that lie in the immediate future will undoubtedly enfranchise a certain proportion of this residue, and it remains to consider in what direction and how far such prospective changes, as far as we are able to forecast them, are likely to take effect. We have seen that the population of England and Wales may for parliamentary purposes be divided thus :—

Counties	13,688,902	= 52·78 per cent.
Boroughs	12,285,537	= 47·29 „
	25,974,439	= 100

And if we assume for the moment an uniformity in the distribution of adult males of 21 and over, we shall find these, and the present quota of electors in the two divisions to be as follows :—

	Adult Males.	Electors.
Counties	3,112,000 = 52·71	932,860 = 36·95
Boroughs	2,793,000 = 47·29	2,591,451 = 63·05
	5,905,000 = 100	2,524,311 = 100

and it would therefore follow that other things being equal, the assimilation of the county franchise to that of the boroughs would raise the county electorate to 1,836,500, and their relative strength would undergo the following modification :—

	Adult Males.	Electors.
Counties	3,112,000 = 52·71	1,773,715 = 52·71
Boroughs	2,793,000 = 47·29	1,591,451 = 47·29
	5,905,000 = 100	3,365,166 = 100

But the assumption of equality in other things is a large one, and may require to be modified by a variety of considerations

which it is difficult to appraise at their true respective values. The comparative density of population in town and country, the differing social conditions under which they live, and difference in the tenure of their homes, must affect the percentage of adult males in the two divisions of the population; but it is by no means easy to assign to each disturbing cause its proper effect.

The population of England and Wales is lodged in 4,831,579 dwellings, which for census purposes are reckoned as "inhabited "houses;" of which 2,733,000 are scheduled in registration counties, and 2,098,000 in boroughs; and assuming an equal proportion of adult males in each case, the proportion would stand thus:—

	Adult Males.	Inhabited Houses.	Adult Males.	Inhabited Houses.
Counties	3,112,000	2,733,000	= 1,000	878
Boroughs	2,793,000	2,098,000	= 1,000	751

The ratio may be shown in another form by comparing the number of persons to each house in different divisions of the country:—

All England.....	1	inhabited house to	5·38	inhabitants.
Registration counties	1	,,	5·01	,,
,, boroughs	1	,,	5·85	,,
Nineteen large cities of 100,000 inhabitants and over— Maximum, London = 7·85 Minimum, Leeds and Hull 4·76	1	,,	5·58	,,
178 small towns in county constituencies	1	,,	5·42	,,

But the fact that the large towns of Leeds, Sheffield, Bradford, Nottingham, Hull, Leicester, and Oldham, are apparently less thickly crowded than the average of counties, while such constituencies as East Retford, with an area of 207,000 acres, or Cricklade, covering 157,000 acres, are counted as boroughs, shows the extreme difficulty of giving with any certainty the number of electors likely to be found or created in any given parliamentary area. A little light is thrown on the subject by the Census Returns (vol. iii, summary Table 2) of the population of the sanitary districts; whence we learn that the adult males of urban districts are in the proportion of 2,541 per 10,000 inhabitants, against 2,593 per 10,000 inhabitants of rural districts. So that at least we may conjecture that if the parliamentary constituencies could be divided into *bonâ fide* urban and rural areas under an equal franchise, there would be

presumably a proportion of electors per 10,000 greater by 52 in the case of the rural than in that of the urban districts.

There are moreover considerations outside the province of statistics that would no doubt affect the total number of electors who might become eligible to vote under an assimilation of the county to the borough franchise. The agricultural labourer occupies his dwelling under conditions very different from those which affect the city artizan; he is notoriously more under the supervision and control of his landlord, and the greater difficulty attendant on removal renders him less willing to incur the risk of disturbance. The extension of an occupation franchise to county constituencies might apparently enable any powerful landlord to suppress or manufacture votes in a way that would not be practicable in towns. Nor must we omit to remember, as indeed we have been frequently reminded of late, that the county franchise rests on a different basis from that of the boroughs. The former is in theory a property qualification, the latter is one of occupation; and it is difficult to support by logical argument the retention of plurality of votes for counties, if the county vote be made an occupation franchise. How far it may be possible to reconcile the constitutional and time honoured rights of the 40*s.* freeholder in half-a-dozen counties with a logical rearrangement of the franchise is a matter of expediency and of practical, perhaps of party statesmanship, but, as has been seen, the result would practically be that unless remedied by some simultaneous compensation, the county electorate, already dwindling in strength relatively to that of the boroughs, would suffer an immediate reduction of 10 per cent. of its strength. It must also be borne in mind that any attribution of members to boroughs at present unrepresented, or union of any such with boroughs at present represented, would act in the same direction. The removal of the 178 unrepresented towns of 10,000 inhabitants and over which are scheduled in the Financial Reform Almanac, from their respective county constituencies, and their formation or adoption into parliamentary boroughs, would not only deprive the counties of their quota of electors, but add to the borough constituencies a force of electors which if we may compare them with the 180 boroughs of not more than 50,000 inhabitants that now return 231 members to Parliament, may fairly be estimated at 477,000, or an increase of more than 15 per cent. of their existing strength.

β. Ireland.—As compared with England and Wales, Scotland exhibits, both in respect of population and electorate, changes similar in their direction, but very much modified in degree; when we turn to Ireland we have to record contrasts rather than comparisons. In place of the great numerical increase in the population

of our counties, and a still greater increase in that of our boroughs, we see a great falling off in the inhabitants of Irish counties, and an increase in her borough population, insignificant as compared with that of England and Scotland. Were it not for the strong conviction of most impartial observers, that the general condition of Ireland has decidedly improved, it would be melancholy indeed to contrast the decrease of more than 50 per cent. in her total population, with the increase of more than 75 per cent. in the case of England and Wales. As far as the figures of 1801 may be trusted,* the population of Ireland was then much what it is now, say 5,100,000 out of a total of 15,629,000, or 30·5 per cent., but the astonishing increase of the Irish population during the subsequent forty years (total, 8,199,000 in 1841) only gave to the country a relative increase of less than 2 per cent. (see Table A 2) as compared with the whole. But in 1832 the electoral strength of Ireland (Table A 4) was only 11·32 per cent. of that of the United Kingdom. Since that time her county electors have been reduced in relative importance by 27 per cent., and her borough electors by nearly 50 per cent., so that Ireland has now only 7·45 per cent. of the voting power of the realm. But before we can institute an effective comparison between the growth in electoral importance of England and Scotland with the decline observable in Ireland, we must bear in mind that the conditions of the social body in the case of the one are not precisely identical with those that affect the other; in the administration of the poor laws, in the character of the crimes that have recently stained her soil, in the disposal of her superfluous population, Ireland is affected in a manner peculiar to herself, and the wide divergence of race, character, and religious belief that marks different parts of Ireland, makes it difficult to treat even of Ireland itself as an homogeneous nation. In endeavouring to ascertain the possible electoral strength of Ireland, I have found it impossible to make, province by province, the allowances and deductions that I have attempted in the case of England and Wales, and I have been compelled to content myself with a comparison of the total adult male population in either case. It is surprising in the first place to find that the ratio of males of 20 and over to total population is in Ireland only fractionally different to that which we find in England, viz., 25·84, as against 25·6 or 24 per 10,000. But this similarity disappears if we look into it more closely, and if we examine province by province the ratio of adult males, the number of electors furnished by each, and the ratio of these to the number of members returned to parliament, we find very wide divergencies. These are best shown in a tabular form thus :—

* Thom's "Official Directory," 1883, p. 565.

TABLE 9.—*Showing the Population in Counties and Boroughs in Ireland, the Number of Adult Males, the Number of Electors, the Ratio of Electors per Ten Thousand Adult Males, the Number of Electors per Member, and Number of Members Returned to Parliament*, 1881.

Province.	Population.	Ratio of Males 20 and over.	Total Males over 20.	Number of Registered Voters.	Number of Electors per 10,000 Adult Males.	Number of Electors per Member.	Number of Members.
Ulster ..... Cos.	1,437,690	25·28	363,400	65,794	1,810	3,655	18
Boros.	301,852		76,300	29,688	3,890	2,699	11
Leinster .... Cos.	932,853	27·92	260,400	41,949	1,610	1,748	24
Boros.	350,028		97,700	15,943	1,632	1,594	10
Connaught Cos.	794,600	24·16	191,900	16,982	885	1,698	10
Boros.	18,906		4,500	1,146	2,546	573	2
Munster .... Cos.	1,093,242	25·63	280,200	43,492	1,552	3,624	12
Boros.	230,668		59,500	10,720	1,801	765	14
Total .... Cos.	4,258,385	25·84	1,095,900	168,217	1,535	2,628	64
Total .... Boros.	901,454		238,000	57,497	2,415	1,553	37
Grand total, Ireland	5,159,839	25·84	1,333,900	225,714	1,692	2,234	101
England .... Cos.	13,698,493	25·6	3,505,000	932,860	2,659	4,988	187
Boros.	12,261,783		3,138,000	1,591,451	5,070	5,358	297
Grand total, England	25,960,276	25·6	6,643,000	2,524,311	3,798	5,215	484

We see from this table that the ratio of electors to the total adult males in Irish counties is but 1,535 per 10,000, as against 2,659 per 10,000 in English counties, a fact that we must set down as being mainly caused by the greater wealth of the latter country. In Irish boroughs the ratio is 2,415 per 10,000, as against 5,070 per 10,000 in English boroughs, an effect due not merely to greater wealth in the one case, but also to the difference in the qualification for the franchise in Irish boroughs. In noting the differences observable between the figures afforded by the provinces of Ireland, it must be remembered that Connaught has but one borough, Galway City, and the figures in this line can therefore hardly be brought fairly into account. It must also be borne in mind that the character of Irish county constituencies is more distinctly

rural, and of Irish boroughs more decidedly urban, than is the case in England. There are in Ireland no towns crying for distinct representation; on the other hand the area of Irish boroughs averages 9·8 square miles, against 15·8 in the case of English boroughs. Against East Retford, with an area of 325 square miles, and Cricklade with 248, Ireland can show Carrickfergus = 26, Cork = 74, Galway City = 37, Kilkenny = 26, and Limerick = 52; the remaining 26 Irish boroughs have an aggregate area of 88 square miles, or very little more than 3 square miles on an average. This circumstance, taken in connection with the insignificance of several of the boroughs, and the fact that the boroughs at present have 37 out of 101 members, while they only have 18 per cent. of the electors of Ireland, seems to point towards an increase of the already preponderating majority of country members in Ireland, should a redistribution only of seats be deemed advisable.

Note.—The following table, in part recapitulating Table 9, will bring the above facts into more clear relief:—

		Percentage of Adult Males to Electors.		Percentage of Electors to Total Electors.		Number of Members.	
Ulster	Counties	18·1	—	27·3	—	18	—
	Boroughs	—	38·9	—	5·7	—	11
Leinster	Counties	16·1	—	19·5	—	24	—
	Boroughs	—	16·3	—	7·3	—	10
Connaught	Counties	8·8	—	14·4	—	10	—
	Boroughs	—	25·5	—	0·3	—	2
Munster	Counties	15·5	—	21·0	—	12	—
	Boroughs	—	18·0	—	4·5	—	14
Total		15·35	24·15	82·2	17·8	64	37

Of the effects of an assimilation of the Irish borough franchise to that of England, or of the establishment of an uniform occupation franchise in both, it is very difficult for one who is not an expert to speak with any confidence. An occupation franchise in boroughs, if it raised the constituencies of the English level, would enfranchise some 63,000 electors, making the total borough electors in all 120,000, against the present 168,000 in the counties, while I am informed that the creation of a 40*s.* freehold vote would not enfranchise more than 10,000 voters in all Ireland. But a franchise that would take in the mass of agricultural labourers would create some 135,000 votes, and thus more than restore the preponderance of the county constituencies.

Whether the number of 100 members allotted to Ireland in her

union with England is sacred or inviolable is a constitutional question with which I will not here presume to meddle; many things have happened since then: the disestablishment of the Irish Church was hardly contemplated under the Act of Union, still less the existence of a party in the English Parliament avowedly pledged to its repeal. The problem is complicated by grave considerations of practical politics and expediency, and I do not do more than hint at the alternative of establishing an equilibrium by adding to the number, already unwieldy enough, of the English and Scotch members of Parliament.

IV.—*Conclusion.*

An attempt has been made in the preceding pages, imperfect and inadequate in many respects, and apparently inconclusive, to trace the steps by which our representative system has reached its present stage of development. An endeavour has been made to show the proportion of the population which is at present in the enjoyment of electoral rights, the manner in which this proportion is distributed, and the power which it exercises in the election of its representatives; and some slight indication has been suggested of the effect which may be produced by alterations that the immediate future may bring forth. It has not been within the scope of the present paper to enlarge on the anomalies in which our existing system is prolific; to set forth the grievances of unrepresented towns, or the tyranny of the favoured landowning class; to denounce the deference to the feelings of minorities that has equalised the influence in Parliament of Leeds or Manchester with that of Portarlington or Downpatrick; or to dilate on the wrongs of the unenfranchised householder who is on the wrong side of the municipal boundary line. These are for the ardent reformer to expound, or for his antagonist to defend or excuse, but I trust that I shall not be held to stray from the path of strict impartiality by recording in a summary form, the manner in which the voice of the individual elector is weakened in county and borough proportionately to the importance of his constituency.

TABLE 10*a*.—*Showing the Population, Electors, Ratio of Population to Members, and Ratio of Electors to Members, in Counties and Boroughs (United Kingdom), Classified according to Population. Counties.*

Constituencies.	Limits of Population.	Gross Population, 1881.	Number of Electors, 1881.	Number of Members.	Ratio of Population to Members.	Ratio of Electors to Members.
19	Under 50,000	609,235	39,116	21	2,911	1,863
28	50,000 to 75,000 .	1,762,134	110,121	43	30,980	2,561
22	75,000 „ 100,000 .	1,947,490	140,902	41	47,499	3,436
23	100,000 „ 125,000 .	2,631,433	167,287	47	55,988	3,559
27	125,000 „ 150,000 .	3,554,281	202,706	54	65,838	3,755
15	150,000 „ 175,000 .	2,427,399	136,835	29	83,703	4,718
25	200,000 and over	7,105,149	400,680	48	148,024	8,347
159		20,037,121	1,197,647	283	—	—

TABLE 10*β*.—*Boroughs.*

Constituencies.	Limits of Population.	Gross Population, 1881.	Number of Electors, 1881.	Number of Members.	Ratio of Population to Members.	Ratio of Electors to Members.
42	Under 7,000	248,990	30,913	42	5,928	736
30	7,000 to 10,000 .	250,317	33,662	30	8,344	1,122
48	10,000 „ 20,000 .	713,137	91,826	72	9,904	1,275
22	20,000 „ 30,000 .	569,953	74,265	32	17,811	2,320
38	30,000 „ 50,000 .	1,543,466	207,721	55	28,063	3,776
34	50,000 „ 100,000 .	2,309,614	334,961	53	43,577	6,320
18	100,000 „ 200,000 .	2,430,047	340,340	33	73,637	10,313
19	200,000 and over	6,745,594	736,789	43	156,874	17,134
251		14,811,118	1,850,477	360	—	—

This table may furnish a text to the advocate of more equal distribution of power between town and country, or of the formation of electoral districts: but it is obvious that in a country whose population is not only constantly on the increase, but is also perpetually changing its centre of gravity, the formation of anything like a symmetrical arrangement is not only practically unattainable, but if attained would be constantly liable to derangement: a temporary symmetry would be dearly bought at the cost of periodical disturbance. Nor would any apparent symmetry of arrangement be free from drawbacks: an ideal electoral district would presumably contain within itself a due proportion of every interest to be represented, and the *reductio ad absurdum* of the system would be the ultimate vesting of the destiny of the country in the vote of a single labourer or a single artizan; or to come down to the realm of practical politics, the manipulation of electoral boundaries, an art known in the United States as "gerrymandering," is an

abuse which such a system would tend to foster, and from which this country has hitherto fortunately been exempt.

When we speak of the importance of the adequate representation of class interests we are apt to forget that class representation may tend to class legislation: surely the theory of our House of Commons is that it is a judicial, not a forensic body: its members are not elected as the advocates of their particular constituencies, or of their particular class, but for deliberation of matters that affect the nation and kingdom as a whole. If the House of Commons is anything better than a vestry, this object must be the aim of any alterations which it may undergo, and the sole *mandat imperatif* that its members can hold from their electors is that their labours shall be for the common interest and the general good.

APPENDIX.

TABLE A.—*Showing the Population, Number of Registered Electors, and Number of Members in the United Kingdom from* 1831 *to* 1881.

I. ENGLAND.—*The Metropolis.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
London (City)	122,531	112,063	50,526	18,584	18,039	25,310	4	4
Westminster	206,547	254,623	228,932	11,576	12,624	21,774	2	2
Chelsea	—	—	366,516	—	—	30,601	—	2
Marylebone	240,294	436,254	498,311	8,901	22,426	34,687	2	2
Finsbury	234,629	387,278	524,480	10,309	22,636	44,166	2	2
Hackney	361,783	647,845	417,191	9,906	30,269	45,130	2	2
Tower Hamlets			438,910			40,681		2
Lambeth	154,613	294,883	498,967	4,768	23,944	49,040	2	2
Southwark	134,117	193,593	221,866	4,775	12,027	23,566	2	2
Greenwich	63,172	139,436	206,651	2,714	9,081	22,737	2	2
	1,517,686	2,465,973	3,452,350	71,533	151,046	337,692	18	22

TABLE A *Contd.—Population, Registered Electors, and Number of Members,* 1831-81.
II. ENGLAND.—*The South-Eastern District.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
COUNTIES.								
Surrey ..... E.	—	—	227,208	—	—	20,438	—	2
,, ... E.	106,217	209,345	—	3,150	9,181	—	2	—
,, ... M.	—	—	308,134	—	—	23,449	—	2
,, ... W.	81,249	109,546	151,408	2,912	3,948	7,972	2	2
Sussex ..... E.	103,744	126,234	163,363	3,437	6,368	10,635	2	2
,, ... W.	54,523	53,025	62,279	2,365	2,717	3,881	2	2
Kent ..... E.	130,256	165,261	209,249	6,678	7,092	13,551	2	2
,, ... M.	—	—	137,637	—	—	9,139	—	2
,, ... W.	187,335	277,058	—	7,026	9,420	—	2	—
,, ... W.	—	—	208,260	—	—	15,764	—	2
Hants ..... N.	96,387	131,634	141,042	2,424	3,522	5,973	2	2
,, ... S.	82,358	112,652	126,720	3,143	5,502	10,206	2	2
Isle of Wight	28,731	47,428	64,542	1,167	2,218	5,044	1	1
Berkshire	111,526	128,590	145,260	5,582	4,996	8,107	3	3
	982,326	1,360,773	1,945,103	37,884	54,964	134,159	20	24
BOROUGHS A.								
Reigate	3,397	9,975	—	152	737	—	1	
Midhurst	5,627	6,405	7,277	252	365	1,074	1	1
Shoreham	25,008	32,622	42,442	1,925	1,866	5,598	2	2
Horsham	5,105	6,747	9,552	257	372	1,263	1	1
Rye	7,360	8,202	8,409	422	383	1,366	1	1
Lymington	5,361	5,179	5,462	249	335	800	2	1
Christchurch	6,077	9,368	28,537	206	379	2,827	1	1
Andover	4,966	5,430	5,871	246	244	869	2	1
Petersfield	4,391	5,655	6,546	234	322	822	1	1
Wallingford	7,352	7,794	8,194	453	347	1,229	1	1
	74,644	97,377	122,290	4,396	5,350	15,848	13	10
BOROUGHS B.								
Guildford	5,286	8,020	11,593	342	716	1,454	2	1
Gravesend	—	—	31,355	—	—	3,486	—	1
Maidstone	15,790	23,058	29,662	1,108	1,689	3,899	2	2
Canterbury	16,112	21,324	21,701	1,511	1,758	3,238	2	2
Dover	15,645	25,325	28,486	1,651	2,207	4,326	2	2
Sandwich	12,183	13,750	15,566	916	1,074	2,207	2	2
Chatham	21,124	36,177	46,806	677	1,754	5,641	1	1
Hythe	8,911	21,367	28,066	469	1,17	3,080	1	1
Rochester	10,585	16,862	21,590	973	1,584	2,938	2	2
Hastings	10,097	22,910	47,735	574	1,513	4,282	2	2
Lewes	9,027	9,716	11,199	878	650	1,445	2	1
Brighton	41,994	87,317	128,407	1,649	5,476	12,657	2	2
Chichester	7,356	8,059	9,652	852	597	1,253	2	1
Southampton	19,324	46,960	60,235	1,403	4,124	7,419	2	2
Winchester	9,292	14,776	17,469	531	901	1,937	2	2
Newport	6,700	7,934	9,110	421	643	1,332	2	1
Portsmouth	50,389	94,799	127,953	1,295	4,302	17,912	2	2
Reading	15,595	25,045	42,050	1,001	1,647	5,312	2	2
Windsor	7,071	9,520	19,080	507	619	2,115	2	1
Abingdon	5,259	5,680	6,608	300	307	876	1	1
Arundel	2,803	2,498	—	351	185	—	1	—
	290,543	501,097	714,323	17,409	32,923	86,809	36	31

TABLE A *Contd.—Population, Registered Electors, and Number of Members,* 1831-81.

III. ENGLAND.—*The South Midland Division.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
COUNTIES.								
Middlesex	192,546	368,424	393,948	6,939	14,312	33,173	2	2
Hertford	131,213	166,511	194,434	4,245	5,778	10,186	3	3
Buckingham	104,422	119,073	117,823	5,306	5,811	8,159	3	3
Oxford	118,516	125,379	122,054	4,721	6,047	7,642	3	3
Northampton .... N.	74,189	91,294	108,954	3,363	3,980	5,996	2	2
„ .... S.	81,555	89,553	82,091	4,425	5,126	6,042	2	2
Huntingdon	47,779	57,996	50,926	2,647	3,008	3,927	2	2
Bedford	88,524	121,874	129,929	3,966	4,730	7,335	2	2
Cambridge	123,038	149,655	144,593	6,435	6,997	10,294	3	3
	961,782	1,289,759	1,344,752	42,047	55,789	92,754	22	22
BOROUGHS A.								
Aylesbury	23,434	27,090	28,899	1,654	1,297	4,440	2	2
Buckingham	7,418	7,626	6,859	300	366	1,135	2	1
Great Marlow	6,175	6,496	6,779	457	334	909	2	1
Woodstock	7,115	7,827	7,027	317	316	1,071	1	1
	44,142	49,039	49,564	2,728	2,313	7,555	7	5
BOROUGHS B.								
Hertford	5,860	6,769	8,556	700	539	1,101	2	1
St. Albans	5,771	—	—	657	—	—	2	—
Wycombe	6,299	8,373	13,154	298	478	1,907	2	1
Oxford (City)	20,649	27,560	40,862	2,312	2,980	6,242	2	2
Banbury	6,411	10,216	12,072	329	608	1,873	1	1
Northampton	15,351	32,813	57,553	2,497	2,690	8,185	2	2
Peterborough	6,511	11,735	22,394	773	586	3,550	2	2
Huntingdon	5,413	6,254	6,417	327	393	1,061	2	1
Bedford	6,959	13,413	19,532	1,572	1,042	2,601	2	2
Cambridge(Borough)	20,917	26,361	40,882	1,499	1,831	5,015	2	2
	100,141	143,494	221,422	10,964	11,147	31,535	19	14
UNIVERSITIES.								
Cambridge	—	—	—	2,319	5,095	6,250	2	2
London	—	—	—	—	—	2,090	—	1
Oxford	—	—	—	2,496	3,744	5,159	2	2
	—	—	—	4,815	8,839	13,499	4	5

TABLE A *Contd.—Population, Registered Electors, and Number of Members,* 1831-81.
IV. ENGLAND.—*The Eastern Division.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
COUNTIES.								
Essex ..... N.E.	—	—	123,067	—	—	6,622	—	2
,, ... N.	146,747	162,441	—	5,163	5,223	—	2	—
,, ... S.	—	—	296,290	—	—	13,911	—	2
,, ... S.	145,401	207,270	—	—	—	—	—	—
,, ... N.W.	—	—	113,240	4,488	7,130	5,876	2	2
Suffolk ..... E.	135,072	146,833	161,869	4,265	6,741	9,885	2	2
,, ... W.	113,673	126,634	121,818	3,326	4,325	5,621	2	2
Norfolk ..... N.	—	—	116,714	—	—	6,495	—	2
,, ... E.	144,315	148,798	—	7,041	8,089	—	2	—
,, ... S.	—	—	113,091	—	—	7,454	—	2
,, ... W.	146,676	161,218	—	4,396	6,636	—	2	—
,, ... W.	—	—	108,702	—	—	6,807	—	2
	831,884	953,194	1,154,791	28,679	38,144	62,671	12	16
BOROUGHS A.								
Eye	7,015	7,038	6,293	253	322	1,020	1	1
Thetford	3,462	4,208	—	146	232	—	2	—
	10,477	11,246	6,293	399	554	1,020	3	1
BOROUGHS B.								
Maldon	4,895	6,261	7,128	716	912	1,485	2	1
Colchester	16,167	23,809	28,395	1,099	1,340	3,762	2	2
Harwich	4,297	5,070	7,810	214	388	801	2	1
Bury St. Edmunds....	11,436	13,318	16,211	620	694	2,231	2	2
Sudbury	5,500	—	—	509	—	—	2	—
Ipswich	20,201	37,950	50,762	1,219	1,996	7,535	2	2
Norwich	61,116	74,891	87,843	4,238	5,454	15,502	2	2
King's Lynn	13,370	16,170	18,475	836	887	2,849	2	2
Great Yarmouth	24,535	34,810	—	1,683	1,535	—	2	—
	161,517	212,279	216,624	11,134	13,206	34,165	18	12

TABLE A *Contd.—Popn., Registered Electors, and No. of Members*, 1831-81.—V. ENGLAND—*South-Western Division.*

	Population.			Electors.			Number of Members.	
COUNTIES.	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1831.	1881.
Wilts ..... N.	79,940	79,362	80,313	3,614	4,305	7,301	2	2
„ ..... S.	74,155	73,932	64,760	2,450	3,270	3,673	2	2
Dorset	114,716	135,695	137,294	5,632	6,221	7,478	3	3
Devon ..... E.	—	—	165,372	—	—	10,780	—	2
„ ..... N.	151,997	150,178	—	7,453	8,716	—	2	—
„ ..... N.	—	—	122,460	—	—	9,487	—	2
„ ..... S.	192,606	220,209	98,331	5,348	9,628	8,329	2	2
Cornwall ..... E.	114,948	136,998	125,546	4,462	5,791	9,471	2	2
„ ..... W.	137,220	169,614	140,958	3,353	4,619	6,952	2	2
Somerset ..... E.	—	—	118,863	—	—	8,487	—	2
„ ..... E.	160,610	172,712	—	8,996	11,174	—	2	—
„ ..... M.	—	—	115,319	—	—	8,722	—	2
„ ..... W.	145,985	159,551	—	7,884	8,712	—	2	—
„ ..... W.	—	—	116,960	—	—	9,130	—	2
	1,172,177	1,298,251	1,286,176	49,192	62,436	89,810	19	23
BOROUGHS A.								
Malmesbury	6,136	6,881	6,866	291	350	1,057	1	1
Chippenham	5,270	6,075	6,776	304	390	1,015	2	1
Calne	4,795	5,179	5,272	191	175	862	1	1
Wilton	7,753	8,657	8,639	214	264	1,415	1	1
Cricklade	28,494	36,893	51,956	1,546	1,739	7,469	2	2
Marlborough	4,186	4,893	5,180	240	281	658	2	1
Westbury	7,324	6,495	6,014	185	285	1,101	1	1
Shaftesbury	8,969	8,983	8,479	634	484	1,372	1	1
Wareham	5,596	6,694	6,192	339	361	1,073	1	1
Ashburton	4,165	3,062	—	198	378	—	1	—
Tavistock	5,602	8,857	6,909	247	422	870	2	1
Tiverton	9,766	10,447	10,462	462	516	1,405	2	2
Liskeard	4,094	6,585	5,591	218	452	759	1	1
Bodmin	5,228	6,381	6,866	252	411	895	2	1
Helston	7,115	8,497	7,919	341	355	1,021	1	1
Launceston	5,414	5,140	5,675	243	431	852	1	1
St. Ives	7,115	10,353	8,705	584	524	1,012	1	1
	127,022	151,072	157,501	6,489	7,818	22,836	23	18
BOROUGHS B.								
Salisbury	11,672	12,278	15,659	576	669	1,962	2	2
Devizes	6,367	6,638	6,645	315	331	921	2	1
Dorchester	4,940	6,823	7,568	322	455	886	2	1
Bridport	6,684	7,719	6,790	426	461	1,070	2	1
Poole	8,216	9,759	12,303	412	546	1,949	2	1
Weymouth, &c.	8,439	11,383	13,704	475	875	1,694	2	2
Exeter	33,552	41,749	47,098	2,952	2,580	7,562	2	2
Plymouth	31,080	62,599	77,401	1,461	2,869	6,366	2	2
Barnstaple	9,272	10,743	12,494	720	738	1,785	2	2
Devonport	44,454	64,783	63,870	1,777	2,758	3,917	2	2
Truro	8,291	11,337	10,663	405	655	1,522	2	2
Penryn, &c.	11,881	14,485	17,561	875	842	2,307	2	2
Taunton	12,148	14,667	16,611	949	827	2,326	2	2
Bath	50,800	52,528	53,761	2,853	3,288	6,017	2	2
Frome	10,370	9,522	9,376	322	399	1,396	1	1
Bridgwater	7,279	11,320	—	484	610	—	2	—
Lyme Regis	3,345	3,215	—	212	245	—	1	—
Dartmouth	4,597	4,444	—	243	277	—	1	—
Honiton	3,509	3,301	—	511	272	—	2	—
Totnes	3,308	4,001	—	217	357	—	2	—
Wells	4,603	4,648	—	338	303	—	2	—
	284,807	367,942	371,504	16,845	20,357	41,680	39	25

TABLE A *Contd.—Population, Registered Electors, and Number of Members,* 1831-81.
VI. ENGLAND.—*The West Midland Division.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1831.	1881.
COUNTIES.								
Gloucester ..... E.	87,566	103,804	88,631	6,437	7,514	8,599	2	2
,, ... W.	119,982	143,410	177,509	6,521	9,329	12,544	2	2
Hereford	94,327	102,321	95,083	5,013	7,233	9,004	3	3
Salop ..... N.	98,384	114,247	119,119	4,682	5,197	7,764	2	2
,, ... S.	64,094	69,346	68,420	2,791	3,964	5,760	2	2
Stafford ..... E.	—	—	138,824	—	—	11,125	—	2
,, ... N.	120,319	162,986	—	8,756	10,344	—	2	—
,, ... N.	—	—	132,634	—	—	11,276	—	2
,, ... S.	129,447	260,262	—	3,107	10,787	—	2	—
,, ... W.	—	—	85,740	—	—	11,829	—	2
Worcester ..... E.	83,151	129,690	208,348	3,122	7,042	12,343	2	2
,, ... W.	56,536	67,256	67,081	5,161	4,973	6,680	2	2
Warwick ..... N.	81,336	117,127	169,270	3,730	6,646	11,769	2	2
,, ... S.	71,651	90,938	99,470	2,550	3,469	6,586	2	2
	1,006,793	1,361,387	1,450,129	51,870	76,498	115,279	23	25
BOROUGHS A.								
Stroud	39,932	35,517	40,573	1,247	1,400	6,331	2	2
Leominster	5,249	5,658	6,042	779	360	901	2	1
Bridgnorth	6,517	7,699	7,216	746	662	1,208	2	1
Wenlock	17,435	21,590	20,143	691	1,011	3,462	2	2
Tamworth	7,182	10,192	14,098	586	463	2,260	2	2
Droitwich	5,949	7,086	9,858	243	380	1,445	1	1
Bewdley	7,939	7,084	8,677	337	365	1,261	1	1
	90,203	94,826	106,607	4,629	4,641	16,868	12	10
BOROUGHS B.								
Bristol	104,408	154,093	206,503	10,315	13,548	25,744	2	2
Gloucester	13,000	16,512	36,552	1,427	1,817	5,320	2	2
Cheltenham	22,942	39,693	46,844	919	2,576	5,134	1	1
Cirencester	5,420	6,336	8,431	604	439	1,157	2	1
Tewkesbury	5,780	5,876	5,100	386	383	757	2	1
Hereford	10,934	15,585	19,822	920	1,096	2,821	2	2
Shrewsbury	21,297	22,163	26,478	1,714	1,501	3,821	2	2
Ludlow	5,870	6,033	6,663	359	407	996	2	1
Stafford	7,583	12,532	19,901	1,176	1,520	3,344	2	2
Newcastle-u.-Lyme...	8,192	12,938	17,506	973	977	3,152	2	2
Stoke-on-Trent	51,589	101,207	152,457	1,349	2,591	19,824	2	2
Lichfield	6,499	6,893	8,360	861	698	1,379	2	1
Wolverhampton	67,514	147,670	164,303	1,700	4,517	23,259	2	2
Walsall	14,420	37,760	59,415	597	1,250	9,538	1	1
Wednesbury	—	—	124,438	—	—	19,561	—	1
Dudley	23,430	44,975	87,407	670	1,051	14,947	1	1
Kidderminster	16,000	15,399	25,634	390	531	3,774	1	1
Worcester	25,659	31,227	40,421	2,366	2,731	6,393	2	2
Evesham	3,991	4,680	5,112	359	340	821	2	1
Birmingham	143,986	296,076	400,757	4,000	10,823	63,909	2	3
Coventry	27,298	41,647	47,366	3,285	5,206	8,263	2	2
Warwick	9,109	10,570	11,802	1,340	660	1,729	2	2
	594,921	1,029,865	1,521,272	35,710	54,662	225,643	38	35

TABLE A *Contd.—Population, Registered Electors, and Number of Members*, 1831-81.

VII. ENGLAND.—*The North Midland Division.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
COUNTIES.								
Leicester ..... N.	84,079	92,078	109,250	3,658	4,745	6,796	2	2
„ ..... S.	72,285	77,278	89,417	4,125	6,081	9,127	2	2
Rutland	19,385	21,861	21,434	1,296	1,842	1,763	2	2
Lincoln ..... N.	—	—	122,472	—	—	11,061	—	2
„ ..... M.	155,282	193,757	99,689	9,134	12,296	9,287	2	2
„ ..... S.	118,315	146,602	121,332	7,956	9,217	11,250	2	2
Nottingham .... N.	65,403	88,886	143,001	2,889	4,006	7,364	2	2
„ .... S.	59,267	71,443	73,302	3,170	3,480	5,040	2	2
Derby ..... N.	—	—	139,910	—	—	6,271	—	2
„ ..... N.	102,236	159,044	—	5,541	5,072	—	2	—
„ ..... E.	—	—	97,582	—	—	7,246	—	2
„ ..... S.	111,307	137,192	—	4,370	8,021	—	2	—
„ ..... S.	—	—	146,013	—	—	8,902	—	2
	787,559	988,141	1,163,402	42,139	54,760	84,107	18	22
BOROUGHS A.								
Retford	40,880	47,330	50,031	2,312	2,537	8,183	2	2
BOROUGHS B.								
Leicester	40,639	68,056	122,351	3,063	4,561	18,977	2	2
Stamford	7,062	8,047	8,995	851	525	1,321	2	1
Boston	12,798	17,893	18,867	869	1,056	3,043	2	2
Grantham	7,427	11,121	17,345	698	735	2,383	2	2
Lincoln	11,217	20,999	37,312	1,043	1,659	6,182	2	2
Grimsby	6,589	15,060	45,373	656	1,254	6,956	1	1
Nottingham	50,220	74,693	111,631	5,220	6,306	17,555	2	2
Newark	9,557	11,515	14,019	1,575	751	2,194	2	2
Derby	23,627	43,091	77,636	1,384	2,525	13,167	2	2
	169,136	270,475	453,529	15,359	19,372	71,778	17	16

TABLE A *Contd.—Population, Registered Electors, and Number of Members, 1831-81.*

VIII. ENGLAND.—*The North-Western Division.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
COUNTIES.								
Chester ..... E.	—	—	104,953	—	—	7,177	—	2
,, ... N.	123,584	182,347	—	5,105	6,174	—	2	—
,, ...Mid.	—	—	135,365	—	—	9,433	—	2
,, ... S.	119,432	160,481	—	5,130	6,804	—	2	—
,, ... W.	—	—	161,104	—	—	12,270	—	2
Lancaster ..... N.	259,444	374,489	273,417	6,593	12,765	17,621	2	2
,, ...N.E.	—	—	238,544	—	—	12,964	—	2
,, ...S.E.	—	—	534,963	—	—	26,841	—	2
,, ... S.	363,405	627,656	—	10,639	23,140	—	2	—
,, ...S.W.	—	—	482,148	—	—	27,181	—	2
	865,865	1,344,973	1,930,494	27,467	48,883	113,487	8	14
BOROUGH A.								
Clitheroe	9,890	10,864	14,463	306	491	1,958	1	1
BOROUGHS B.								
Stockport	41,000	54,681	59,544	1,012	1,529	8,158	2	2
Macclesfield	30,406	36,101	37,620	718	1,012	5,447	2	2
Chester	21,344	31,110	40,342	2,028	2,705	5,804	2	2
Birkenhead	(4,195)	51,649	83,324	—	3,464	9,107	1	1
Liverpool	201,751	443,938	552,425	11,283	16,476	63,221	2	3
Wigan	20,774	37,658	48,196	423	845	5,937	2	2
Warrington	18,184	26,947	45,257	456	778	6,222	1	1
Bolton	42,245	70,395	105,973	1,020	2,220	14,250	2	2
Bury	19,140	37,563	49,746	535	1,326	6,859	1	1
Salford	50,810	102,449	176,233	1,497	5,137	23,928	1	2
Manchester.....	187,022	357,979	393,676	6,726	21,880	58,712	2	3
Ashton-under-Lyne..	14,035	33,917	43,389	433	1,170	5,893	1	1
Oldham	50,513	94,344	152,511	1,131	2,386	21,383	2	2
Rochdale	19,041	38,184	68,865	687	1,448	10,788	1	1
Burnley	—	—	63,502	—	—	7,414	—	1
Blackburn	27,091	63,126	100,618	626	1,809	13,160	2	2
Preston	33,871	82,985	93,707	6,352	2,818	11,748	2	2
Stalybridge	—	—	39,671	—	—	5,685	—	1
Lancaster	14,066	16,005	—	1,109	1,359	—	1	—
	795,490	1,579,031	2,154,599	36,036	68,362	283,716	27	31

TABLE A *Contd.—Population, Registered Electors, and Number of Members,* 1831-81.

IX. ENGLAND.—*The Yorkshire Division.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
COUNTIES.								
York, E. Riding	107,292	127,053	141,451	5,559	7,127	11,126	2	2
,, N. ,,	160,555	201,004	221,937	9,539	15,167	20,212	2	2
,, W. ,,	638,741	880,994	—	18,056	40,341	—	2	—
,, ,, ,, E.	—	—	303,713	—	—	22,194	—	2
,, ,, ,, N.	—	—	301,048	—	—	22,315	—	2
,, ,, ,, S.	—	—	497,568	—	—	26,750	—	2
	906,588	1,209,051	1,465,717	33,154	62,635	102,597	6	10
BOROUGHS A.								
Thirsk	4,672	5,350	6,306	254	441	976	1	1
Richmond	4,722	5,134	5,542	273	315	708	2	1
Malton	6,802	8,072	8,750	667	595	1,396	2	1
Beverley	8,263	10,686	—	1,011	1,224	—	2	—
Northallerton	4,839	4,755	5,445	232	396	918	1	1
	29,298	33,997	26,043	2,437	2,971	3,998	8	4
BOROUGHS B.								
Ripon	5,700	6,172	7,390	341	342	1,132	2	1
Knaresborough	5,936	5,402	5,000	278	265	758	2	1
Huddersfield	19,035	34,877	87,146	608	1,876	13,268	1	1
Halifax	21,552	37,014	73,653	531	1,570	12,055	2	2
Bradford	43,527	106,218	180,459	1,139	4,292	27,437	2	2
Leeds	123,393	207,165	309,126	4,171	7,616	49,414	2	3
Dewsbury	—	—	69,531	—	—	10,060	—	1
Wakefield	15,932	23,150	30,573	722	1,062	4,087	1	1
Pontefract	9,999	11,736	15,329	956	674	2,360	2	2
Sheffield	91,692	185,172	284,410	3,308	8,389	42,402	2	2
York	28,244	45,385	59,596	2,893	4,581	11,108	2	2
Hull	51,911	97,661	161,519	3,863	5,789	26,581	2	2
Scarborough	8,760	18,377	30,484	431	1,233	4,301	2	2
Whitby	10,399	12,051	14,554	422	667	2,145	1	1
Middlesborough	—	—	54,965	—	—	10,750	—	1
	436,080	790,380	1,383,715	19,663	38,356	217,858	23	24

TABLE A *Contd.—Population, Registered Electors, and Number of Members*, 1831-81.
X. ENGLAND.—*The Northern Division.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
COUNTIES.								
Durham ..... N.	78,151	169,543	298,111	4,269	5,333	13,233	2	2
,, ... S.	75,862	170,412	181,304	4,336	6,989	11,603	2	2
Northumberland N.	60,356	65,892	67,960	2,322	3,088	4,469	2	2
,, S.	79,889	106,855	129,576	5,192	5,410	8,957	2	2
Cumberland .... E.	72,544	75,972	72,690	4,035	5,374	7,928	2	2
,, ... W.	56,115	73,988	115,168	3,848	4,716	7,640	2	2
Westmoreland	43,464	48,788	50,488	4,392	4,192	5,652	2	2
	466,381	711,540	915,297	28,394	35,102	59,482	14	14
BOROUGH A.								
Cockermouth	6,022	7,057	7,189	305	415	1,100	2	1
BOROUGHS B.								
Darlington	—	—	33,426	—	—	5,214	—	1
Stockton	—	—	55,446	—	—	8,062	—	1
The Hartlepools.....	—	—	46,998	—	—	7,017	—	1
Durham	10,135	14,088	15,372	806	1,153	2,390	2	2
Sunderland.....	40,735	85,797	124,960	1,378	2,837	15,297	2	2
South Shields	18,756	35,239	56,922	478	1,199	10,112	1	1
Gateshead	15,617	33,587	65,873	454	992	11,685	1	1
Newcastle-on-Tyne...	53,613	109,108	145,228	3,905	6,838	24,261	2	2
Tynemouth	23,206	34,021	43,863	760	1,117	5,731	1	1
Morpeth	6,766	13,794	33,402	321	440	5,749	1	1
Berwick	13,129	13,265	13,995	705	799	1,989	2	2
Carlisle	18,865	29,417	35,866	977	1,418	5,504	2	2
Whitehaven	15,716	18,842	19,717	458	638	2,582	1	1
Kendal	11,577	12,029	13,696	327	406	1,957	1	1
	228,115	399,187	704,764	10,566	17,837	107,550	16	19

TABLE A *Contd.*—*Population, Registered Electors, and Number of Members*, 1831-81.
XI. *The Welsh Division.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
COUNTIES.								
Monmouth	84,541	144,056	166,441	3,738	4,911	8,617	2	2
Glamorgan	65,457	143,305	234,115	3,680	6,501	12,889	2	2
Carmarthen	85,381	89,439	93,389	3,887	4,241	8,656	2	2
Pembroke	61,193	63,847	55,019	3,700	4,162	5,219	1	1
Cardigan	56,519	62,354	58,956	1,184	3,228	5,024	1	1
Brecon	40,967	53,531	48,800	1,668	2,503	4,184	1	1
Radnor	18,371	18,305	16,888	1,046	1,599	2,398	1	1
Montgomery	49,572	48,883	45,756	2,523	3,375	5,270	1	1
Flint	44,118	50,892	55,153	1,271	3,084	4,789	1	1
Denbigh	67,049	82,890	86,100	3,401	5,203	7,415	2	2
Merioneth	35,315	38,963	54,793	580	1,475	3,836	1	1
Carnarvon	50,530	72,787	90,500	1,688	2,167	6,976	1	1
Anglesea	37,638	41,334	36,722	1,187	2,425	3,241	1	1
	696,651	910,586	1,042,632	29,553	44,874	78,514	17	17
BOROUGHS A.								
Merthyr Tydvil	27,281	83,875	91,347	502	1,322	14,200	1	2
Flint	16,126	18,845	24,234	1,359	723	3,798	1	1
Radnor	6,400	7,106	6,700	529	350	947	1	1
	49,807	109,826	122,281	2,390	2,395	18,945	3	4
BOROUGHS B.								
Monmouth	13,585	30,577	44,933	899	1,666	5,116	1	1
Cardiff	8,240	35,541	82,573	687	1,911	8,831	1	1
Swansea	27,134	57,488	105,949	1,307	1,923	14,321	1	1
Carmarthen	14,340	21,439	30,529	684	853	5,752	1	1
Pembroke	11,150	21,773	25,309	1,208	1,545	3,361	1	1
Haverford West	8,359	9,821	9,176	723	671	1,555	1	1
Cardigan	10,003	11,646	14,517	1,030	658	2,074	1	1
Brecknock	5,296	5,639	6,623	242	315	879	1	1
Montgomery	17,272	18,036	20,042	723	933	3,089	1	1
Denbigh	15,616	17,888	22,831	1,131	863	3,084	1	1
Carnarvon	16,288	22,907	28,695	855	992	4,093	1	1
Beaumaris	10,687	13,275	14,242	329	525	2,559	1	1
	157,970	266,030	405,419	9,818	12,855	54,714	12	12

TABLE A *Contd.—Population, Registered Electors, and Number of Members,* 1831-81.

SCOTLAND.

COUNTIES.	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832.	1862.	1881.	1832.	1881.
Aberdeen .... { W. E. }	113,130	149,539	148,119	2,271	4,170	{ 4,721 4,139 }	1	{ 1 1 }
Argyll	93,507	83,859	63,479	995	1,962	3,426	1	1
Ayr ..... { N. S. }	114,156	115,109	162,851	3,150	4,689	{ 3,711 3,920 }	1	{ 1 1 }
Banff	44,076	56,020	51,819	498	1,007	2,646	1	1
Berwick	32,973	36,488	34,415	1,053	1,227	1,869	1	1
Bute	14,151	16,331	17,489	279	500	1,364	1	1
Caithness	24,679	25,205	30,763	221	511	1,147	1	1
Clackmannan and Kinross	23,801	20,122 8,731 }	32,342	879	{ 747 457 }	2,105	1	1
Dumbarton	29,588	54,179	61,394	927	1,634	3,041	1	1
Dumfries	52,759	52,908	53,113	1,123	2,071	3,409	1	1
Edinburgh	45,454	60,555	86,748	1,298	1,569	3,870	1	1
Elgin and Nairn	32,402	{ 17,447 8,347 }	38,629	{ 536 106 }	701 162	1,958	1	1
Fife	78,425	114,768	101,333	2,185	2,720	4,789	1	1
Forfar	53,944	66,788	67,479	1,241	2,099	3,634	1	1
Haddington	23,703	24,484	29,084	617	688	1,067	1	1
Inverness	80,473	64,522	72,787	669	909	1,894	1	1
Kincardine	30,294	34,854	33,350	763	1,019	1,866	1	1
Kirkcudbright	36,772	42,495	39,095	1,059	1,345	2,223	1	1
Lanark ..... { N. S. }	85,873	245,580	372,172	2,705	5,202	{ 10,475 3,707 }	1	{ 1 1 }
Linlithgow	19,420	39,045	37,567	600	764	1,266	1	1
Orkney and Shetland	55,183	{ 32,395 31,670 }	57,492	272	{ 433 232 }	1,727	1	1
Peebles and Selkirk	10,578 6,833	11,300 10,410 }	20,862	{ 307 281 }	466 514	1,217	1	1
Perth	121,390	107,948	99,647	3,180	3,754	6,005	1	1
Renfrew	66,367	79,242	127,223	1,347	2,316	6,185	1	1
Ross and Cromarty ..	65,604	82,427	72,486	516	{ 887 43 }	1,739	1	1
Roxburgh	40,046	53,722	33,858	1,321	1,618	2,026	1	1
Stirling	51,315	15,831	83,106	1,787	1,924	3,399	1	1
Sutherland	25,014	24,157	22,806	84	191	325	1	1
Wigtown	28,177	31,710	28,735	845	1,113	1,700	1	1
	1,500,087	1,818,188	2,080,243	33,115	49,644	96,570	30	32

TABLE A *Contd.—Population, Registered Electors, and Number of Members,* 1831-81.

SCOTLAND—*Contd.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832.	1862.	1881.	1832.	1881.
BOROUGHS.								
Aberdeen	58,019	73,805	105,003	2,024	3,442	14,152	1	1
Ayr	20,272	34,578	41,731	631	1,203	4,267	1	1
Dumfries	23,701	22,996	25,583	967	971	2,999	1	1
Dundee	45,355	90,417	140,054	1,622	2,441	15,825	1	2
Edinburgh	136,294	168,121	228,190	6,048	8,347	28,644	2	2
Elgin	15,529	26,771	32,845	776	978	3,829	1	1
Falkirk	39,709	41,530	49,346	969	1,540	5,353	1	1
Glasgow	202,426	394,864	487,948	6,989	18,711	57,882	2	3
Greenock	27,571	42,098	63,899	985	1,524	7,373	1	1
Haddington	17,134	13,142	13,755	545	652	1,880	1	1
Hawick	—	—	34,708	—	—	4,909	—	1
Inverness	22,813	20,380	26,427	715	887	3,118	1	1
Kilmarnock	34,482	49,376	65,650	1,155	1,449	8,240	1	1
Kirkcaldy	11,780	23,476	31,831	507	778	4,518	1	1
Leith	37,597	45,417	72,851	1,624	2,139	10,377	1	1
Montrose	41,444	49,545	59,676	1,494	1,627	8,278	1	1
Paisley	31,460	47,406	55,642	1,242	1,370	4,979	1	1
Perth	20,016	25,250	28,948	780	966	4,059	1	1
St. Andrew	18,377	16,777	19,406	621	739	2,693	1	1
Stirling	30,992	30,777	36,793	956	1,224	4,904	1	1
Wick	20,827	16,995	17,456	366	657	1,830	1	1
Wigtown	9,209	10,385	10,139	316	506	1,420	1	1
	865,007	1,244,106	1,647,881	31,332	52,151	201,529	23	26
UNIVERSITIES.								
Edinburgh and St. Andrew's	—	—	—	—	—	6,039	—	1
Glasgow and Aberdeen	—	—	—	—	—	6,080	—	1
	—	—	—	—	—	12,119	—	2

TABLE A *Contd.—Population, Registered Electors, and Number of Members*, 1831-81.

IRELAND.

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832.	1862.	1881.	1832.	1881.
Ulster.								
COUNTIES.								
Antrim	263,467	283,063	218,123	3,487	9,910	11,570	2	2
Armagh	210,664	176,176	148,078	3,342	5,893	6,855	2	2
Cavan	227,933	153,906	129,008	2,248	6,319	5,898	2	2
Donegal	289,149	237,395	205,443	1,448	4,643	4,542	2	2
Down	334,163	285,646	233,422	3,130	11,470	12,718	2	2
Fermanagh	143,647	99,948	78,791	1,429	4,469	4,544	2	2
Londonderry	206,130	157,098	129,083	2,172	5,654	5,696	2	2
Monaghan	195,536	126,482	102,590	2,139	5,370	5,297	2	2
Tyrone	300,953	234,506	193,152	1,151	8,357	8,674	2	2
	2,171,642	1,754,220	1,437,690	20,546	62,085	65,794	18	18
BOROUGHS.								
Belfast	48,224	78,344	207,671	1,659	3,570	21,989	2	2
Lisburn	5,218	8,585	10,834	91	610	798	1	1
Carrickfergus	8,706	9,417	10,009	1,024	1,158	1,500	1	1
Armagh	9,470	9,320	8,797	444	428	652	1	1
Downpatrick	4,784	4,317	3,902	517	229	319	1	1
Newry	13,065	13,108	15,085	1,017	572	1,216	1	1
Enniskillen	6,116	5,820	5,842	212	279	414	1	1
Londonderry	10,130	20,875	28,947	611	875	2,078	1	1
Coleraine	5,752	6,236	6,684	207	271	443	1	1
Dungannon	3,515	3,994	4,081	154	200	279	1	1
	114,980	160,016	301,852	5,936	8,192	29,688	11	11
Leinster.								
COUNTIES.								
Carlow	72,874	49,716	40,640	1,246	2,520	2,127	2	2
Dublin	176,012	146,501	145,088	2,025	6,126	4,991	2	2
Kildare	108,424	90,946	76,102	1,122	3,092	2,746	2	2
Kilkenny	169,945	106,570	83,810	1,246	5,295	4,741	2	2
King's	144,225	89,072	71,867	1,310	3,449	3,211	2	2
Louth	97,403	63,727	60,790	863	2,461	2,070	2	2
Longford	112,558	71,694	86,301	1,294	2,861	2,595	2	2
Meath	176,826	109,495	51,272	1,520	4,327	3,838	2	2
Queen's	142,760	87,195	69,805	1,471	3,604	3,066	2	2
Westmeath	125,466	87,606	68,303	1,395	3,653	3,462	2	2
Wexford	167,029	125,381	105,196	2,907	6,629	5,823	2	2
Wicklow	121,557	86,479	73,679	1,566	3,498	3,279	2	2
	1,615,079	1,114,382	932,853	17,955	47,515	41,949	24	24
BOROUGHS.								
Carlow	9,114	8,973	7,036	278	274	295	1	1
Dublin	204,155	263,751	273,064	7,008	10,847	12,490	2	2
Kilkenny	23,741	17,713	14,964	562	578	663	1	1
Drogheda	17,365	17,436	14,662	560	587	721	1	1
Dundalk	10,078	10,428	12,294	318	293	546	1	1
Portarlington	3,091	2,874	2,426	137	108	142	1	1

TABLE A *Contd.—Population, Registered Electors, and Number of Members*, 1831-81.

IRELAND—*Contd.*

	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832.	1862.	1881.	1832.	1881.
BOROUGHS—*Contd.*								
Athlone	11,406	6,227	6,901	243	222	337	1	1
Wexford	10,673	11,673	12,055	269	326	488	1	1
New Ross	5,011	7,132	6,626	130	191	261	1	1
	294,634	346,207	350,028	9,505	13,426	15,943	10	10
UNIVERSITY.								
Dublin	—	—	—	2,073	1,780	3,742	2	2
Connaught.								
COUNTIES.								
Galway	381,564	246,317	222,756	3,061	5,572	4,807	2	2
Leitrim	141,524	104,744	89,795	1,318	2,417	2,294	2	2
Mayo	366,328	254,796	243,030	1,350	4,033	3,087	2	2
Roscommon	249,613	154,318	128,064	1,776	3,932	3,602	2	2
Sligo	156,613	112,280	110,955	695	3,139	3,192	2	2
	1,295,642	872,455	794,600	8,200	19,093	16,982	10	10
BOROUGHS.								
Galway	33,120	25,161	18,906	2,062	1,161	1,146	2	2
Sligo	15,152	12,565	—	418	375	—	1	—
	48,272	37,726	18,906	2,480	1,536	1,146	3	2
Munster.								
COUNTIES.								
Clare	251,211	156,804	134,908	2,518	5,633	5,413	2	2
Cork	669,394	419,668	373,202	2,835	16,407	14,945	2	2
Kerry	253,558	191,445	190 784	1,161	5,182	5,202	2	2
Limerick	248,801	162,801	128,957	2,565	6,274	5,797	2	2
Tipperary	380,476	232,507	188,537	2,369	9,388	9,067	2	2
Waterford	141,706	96,817	76,854	1,448	3,611	3,068	2	2
	1,945,146	1,260,042	1,093,242	13,896	46,495	43,492	12	12
BOROUGHS.								
Cork	107,016	102,526	97,526	4,322	3,169	4,813	2	2
Bandon	9,917	6,419	6,045	266	243	434	1	1
Kinsale	7,823	4,850	5,560	206	130	190	1	1
Youghal	9,608	6,514	6,040	297	136	266	1	1
Mallow	6,974	4,841	4,437	458	169	288	1	1
Ennis	7,111	7,175	6,302	237	184	254	1	1
Tralee	9,568	10,355	9,664	180	256	380	1	1
Limerick	66,554	56,802	48,246	2,868	1,888	1,906	2	2
Clonmel	15,116	11,143	10,519	521	341	416	1	1
Waterford	28,821	28,790	28,952	1,241	1,138	1,469	2	2
Dungarvan	6,527	8,645	7,377	677	267	304	1	1
Cashel	6,971	5,458	—	277	149	—	1	—
	282,006	253,518	230,668	11,550	8,070	10,720	15	14

TABLE A *Contd.—Population, Registered Electors, and Number of Members,* 1831-81.

SUMMARY I.—*England and Wales.*

Registration Districts.	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
COUNTIES.								
II. South-Eastern	982,326	1,360,773	1,945,103	37,884	54,964	134,159	20	24
III. South-Midland	961,782	1,289,759	1,344,752	42,047	55,789	92,754	22	22
IV. Eastern	831,884	953,194	1,154,791	28,679	38,144	62,671	12	16
V. South-Western	1,172,177	1,298,251	1,286,176	49,192	62,436	89,810	19	23
VI. West-Midland	1,006,793	1,361,387	1,450,129	51,870	76,498	115,279	23	25
VII. North-Midland	787,559	988,141	1,163,402	42,139	54,760	84,107	18	22
VIII. North-Western	865,865	1,344,973	1,930,494	27,467	48,883	113,487	8	14
IX. Yorkshire	906,588	1,209,051	1,465,717	33,154	62,635	102,597	6	10
X. Northern	466,381	711,540	915,297	28,394	35,102	59,482	14	14
XI. Welsh	696,651	910,586	1,042,632	29,553	44,874	78,514	17	17
Total	8,678,006	11,427,655	13,698,493	370,379	534,085	932,860	159	187
BOROUGHS A.								
II. South-Eastern	74,644	97,377	122,290	4,396	5,350	15,848	13	10
III. South-Midland	44,142	49,039	49,564	2,728	2,313	7,555	7	5
IV. Eastern	10,477	11,246	6,293	399	554	1,020	3	1
V. South-Western	127,022	151,072	157,501	6,489	7,818	22,836	23	18
VI. West-Midland	90,203	94,826	106,607	4,629	4,641	16,868	12	10
VII. North-Midland	40,880	47,330	50,031	2,312	2,537	8,183	2	2
VIII. North-Western	9,890	10,864	14,463	306	491	1,958	1	1
IX. Yorkshire	29,298	33,997	26,043	2,437	2,971	3,998	8	4
X. Northern	6,022	7,057	7,189	305	415	1,100	2	1
XI. Welsh	49,807	109,826	122,281	2,390	2,395	18,945	3	4
Total	482,385	612,634	662,262	26,391	29,485	98,311	74	56
BOROUGHS B.								
I. Metropolis	1,517,686	2,465,973	3,452,350	71,533	151,046	337,692	18	22
II. South-Eastern	290,543	501,097	714,323	17,409	32,923	86,809	36	31
III. South-Midland	100,141	143,494	221,422	10,964	11,147	31,535	19	14
IV. Eastern	161,517	212,279	216,624	11,134	13,206	34,165	18	12
V. South-Western	284,807	367,942	371,504	16,845	20,357	41,680	39	25
VI. West-Midland	594,921	1,029,865	1,521,272	35,710	54,662	225,643	38	35
VII. North-Midland	169,136	270,475	453,529	15,359	19,372	71,778	17	16
VIII. North-Western	795,490	1,579,031	2,154,599	36,036	68,362	283,716	27	31
IX. Yorkshire	436,080	790,380	1,383,715	19,603	38,356	217,858	23	24
X. Northern	228,115	399,187	704,764	10,566	17,837	107,550	16	19
XI. Welsh	157,970	266,030	405,419	9,818	12,855	54,714	12	12
Total	4,736,406	8,025,753	11,599,521	255,037	440,123	1,493,140	262	241
Universities	—	—	—	4,815	8,839	13,499	4	5
Grand total England and Wales	13,896,797	20,066,042	25,960,276	656,622	1,003,693	2,537,810	500	489

TABLE A *Contd.*—*Population, Registered Electors, and Number of Members,* 1831-81.

SUMMARY II.—*Scotland.*

Registration Districts.	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1831.	1881.
Counties	1,500,087	1,818,188	2,080,243	33,115	49,644	96,570	30	32
Boroughs	865,007	1,244,106	1,647,881	31,332	52,151	201,529	23	26
Universities	—	—	—	—	—	12,119	—	2
Total	2,365,094	3,062,294	3,728,124	64,447	101,795	310,218	53	60

SUMMARY III.—*Ireland.*

Registration Districts.	Population.			Electors.			Number of Members.	
	1831.	1861.	1881.	1832-33.	1862-63.	1881.	1832.	1881.
Counties—								
Ulster	2,171,642	1,754,220	1,437,690	20,546	62,085	65,794	18	18
Leinster	1,615,079	1,114,382	932,853	17,955	47,515	41,949	24	24
Connaught	1,295,642	872,455	794,600	8,200	19,093	16,982	10	10
Munster	1,945,146	1,260,042	1,093,242	13,896	46,495	43,492	12	12
Total	7,027,509	5,001,099	4,258,385	60,597	175,188	168,217	64	64
Boroughs—								
Ulster	114,980	160,016	301,852	5,936	8,192	29,688	11	11
Leinster	294,634	346,207	350,028	9,505	13,426	15,943	10	10
Connaught	48,272	37,726	18,906	2,480	1,536	1,146	3	2
Munster	282,006	253,518	230,668	11,550	8,070	10,720	15	14
Total	739,892	797,467	901,454	29,471	31,224	57,497	39	37
University—								
Dublin	—	—	—	2,073	1,780	3,742	2	2
Grand total	7,767,401	5,798,566	5,159,839	92,141	208,192	229,456	105	103

TABLE A 1.—*Showing the Population in Counties and Boroughs respectively of the United Kingdom,* 1831 *and* 1881.

	Counties.		Boroughs.		Universities.		Total.	
	1831.	1881.	1831.	1881.	1831.	1881.	1831.	1881.
England and Wales	8,678,006	13,698,493	5,218,791	12,261,783	—	—	13,896,797	25,960,276
Scotland	1,500,087	2,080,243	865,007	1,647,881	—	—	2,365,094	3,728,124
Ireland	7,027,509	4,285,385	739,892	901,454	—	—	7,767,401	5,159,839
	17,205,602	20,037,121	6,823,690	14,811,118	—	—	24,029,292	34,848,239

TABLE A 2.—*Showing the Distribution of the Population of the United Kingdom in* 1831 *and* 1881.

	Counties.		Boroughs.		Universities.		Total.	
	1831.	1881.	1831.	1881.	1831.	1881.	1831.	1881.
England and Wales	36·12	39·31	21·72	35·18	—	—	57·84	74·49
Scotland	6·24	5·97	3·60	4·73	—	—	9·84	10·70
Ireland	29·24	12·22	3·08	2·59	—	—	32·32	14·81
	71·60	57·50	28·40	42·50	—	—	100·00	100·00

TABLE A 3.—*Showing the Number of Electors in the United Kingdom*, 1832 *and* 1881.

	Counties.		Boroughs.		Universities.		Total.	
	1832-33.	1881.	1832-33.	1881.	1832-33.	1881.	1832-33.	1881.
England and Wales	370,379	932,860	281,428	1,591,451	4,815	13,499	656,522	2,537,810
Scotland	33,115	96,570	31,332	201,529	—	12,119	64,447	310,218
Ireland	60,597	168,217	29,471	57,497	2,073	3,742	92,141	229,456
	464,091	1,197,647	342,231	1,850,477	6,888	29,360	813,110	3,077,484

TABLE A 4.—*Showing the Distribution of Electors in the United Kingdom in* 1832 *and* 1881.

	Counties.		Boroughs.		Universities.		Total.	
	1832.	1881.	1832.	1881.	1832.	1881.	1832.	1881.
England and Wales	45·56	30·32	34·60	51·70	0·58	0·44	80·74	82·46
Scotland	4·07	3·14	3·87	6·56	—	0·39	7·94	10·09
Ireland	7·45	5·46	3·61	1·87	0·26	0·12	11·32	7·45
	57·08	38·92	42·08	60·13	0·84	0·95	100·00	100·00

TABLE A 5.—*Showing the Distribution of Seats in the United Kingdom in* 1832 *and* 1881.

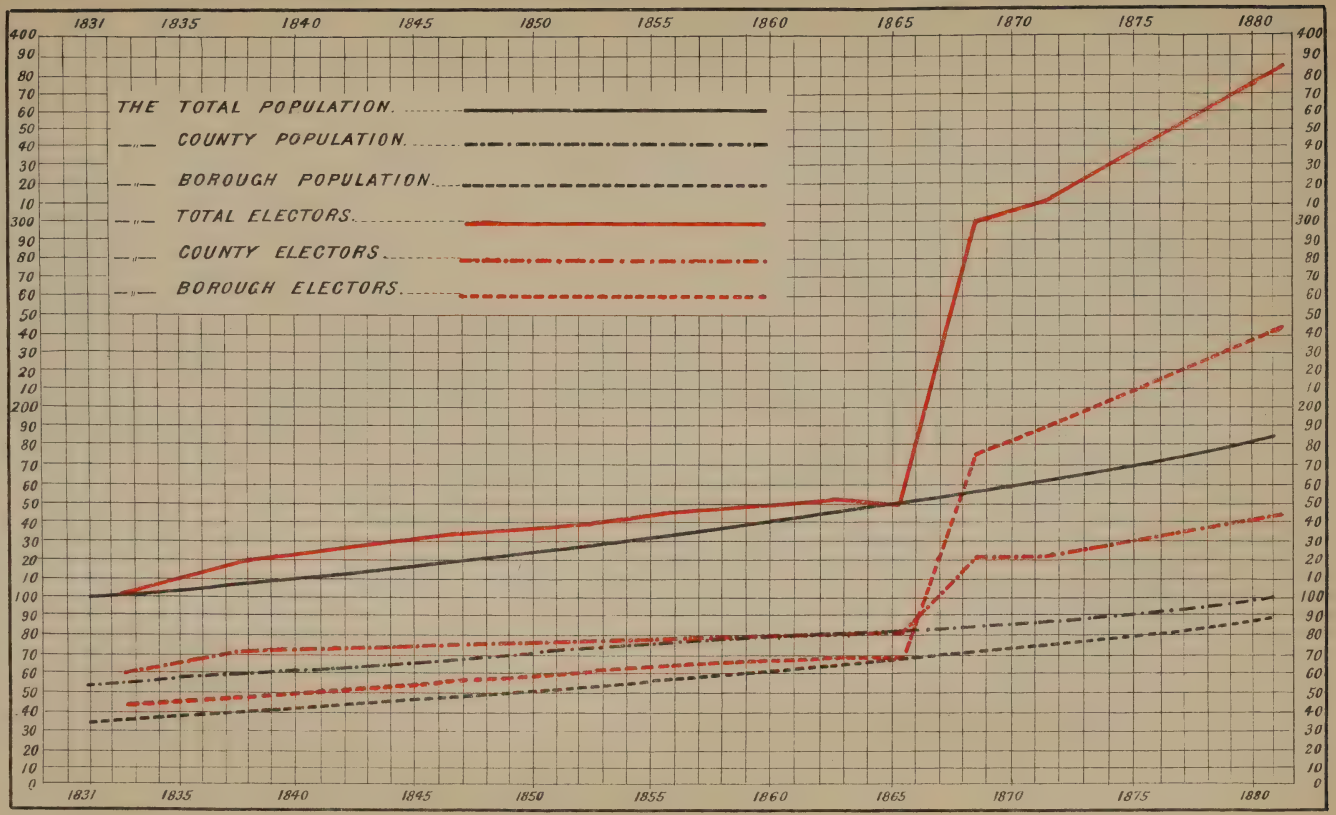
	Counties.		Boroughs.		Universities.		Total.	
	1832.	1881.	1832.	1881.	1832.	1881.	1832.	1881.
England and Wales	159	187	337	297	4	5	500	489
Scotland	30	32	23	26	—	2	53	60
Ireland	64	64	39	37	2	2	105	103
	253	283	399	360	6	9	658	652

TABLE A 6.—*Showing the Increase of Population, and Total Number of Electors on Registers in Counties and Boroughs (England and Wales)*, 1831-81.

Year.	Population. [000's omitted.]			Increase per Cent.			Year.	Total Electors on Register.			Increase per Cent.		
	Counties.	Boroughs.	Total.	Counties.	Boroughs.	Total.		Counties.	Boroughs.	Total.	Counties.	Boroughs.	Total.
1831.....	8,678,	5,218,	13,896,	62·5	37·5	100·0	1832–33....	370,379	281,428	651,807	56·8	43·2	100·0
							'37–38*	473,502	321,369	794,871	72·6	49·3	121·9
							'46–47*	510,523	372,258	882,781	78·3	57·1	135·4
'51*	10,488,	7,433,	17,921,	75·5	53·5	129·0	'52–53*	509,890	404,393	914,283	78·2	62·1	140·3
'61.....	11,427,	8,638,	20,065,	82·2	64·2	144·4	'62–63....	534,085	469,608	1,003,693	81·9	72·1	154·0
							'65–66....	542,521	458,368	1,000,889	83·2	70·3	153·5
							'68–69....	791,916	1,167,473	1,959,389	121·5	179·1	300·6
'71.....	12,059,	10,650,	22,709,	86·8	76·6	163·4	'71–72....	804,294	1,250,019	2,054,313	123·4	191·8	315·2
'81.....	13,698,	12,262,	25,960,	98·6	88·2	186·8	'81–82....	932,860	1,591,451	2,524,311	143·2	244·1	387·1

* From Mr. Newmarch's tables.

DIAGRAM (SEE TABLE A. 6) SHOWING THE INCREASE FROM 1831 TO 1881 OF



Harrison & Sons Lith. 59 Martins Lane W.C.

DIAGRAM (SEE TABLE A. 7) SHOWING THE PERCENTAGE FROM 1831 TO 1881 OF

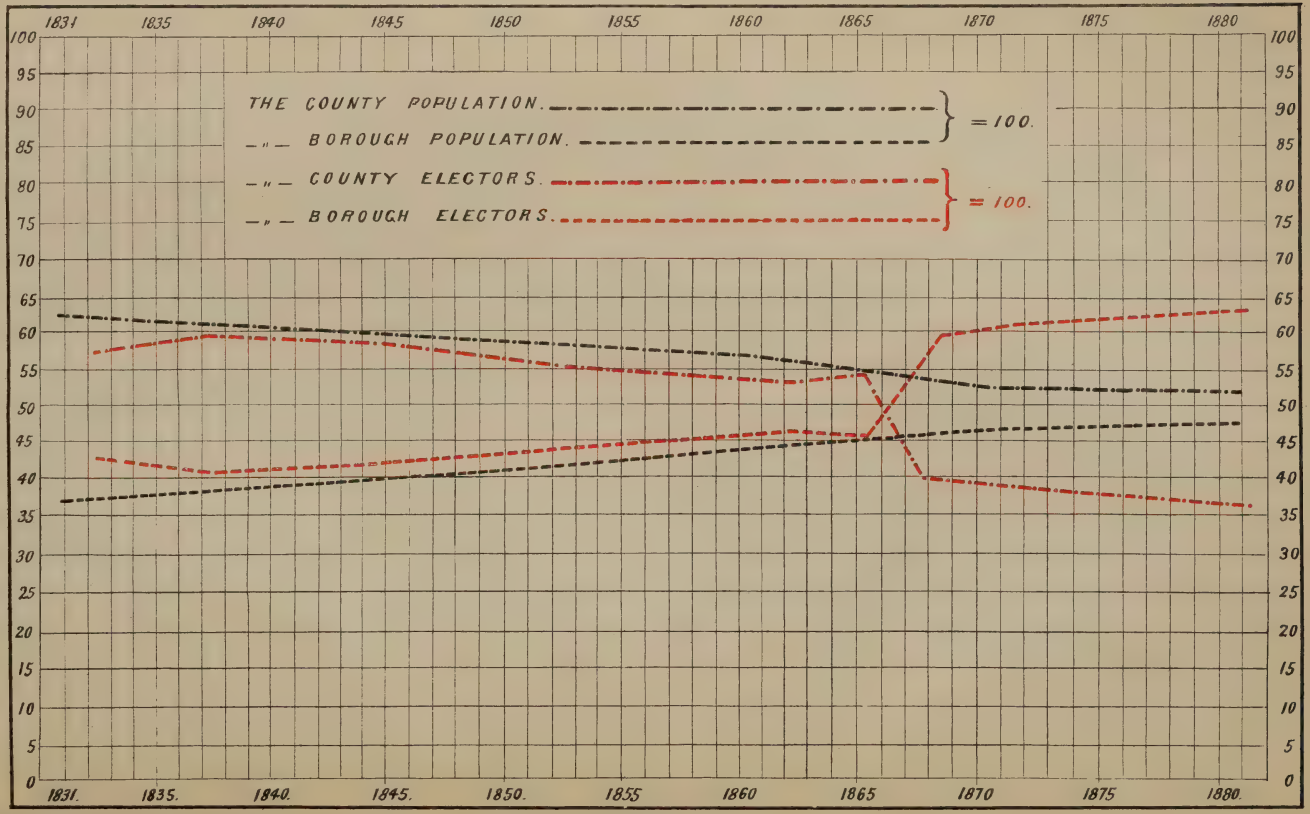


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TABLE A 7.—*Showing the Proportion per Cent. of County and Borough Population, and County and Borough Electors*, 1831-81.

Year.	Population.			Year.	Total Electors on Register.		
	Counties.	Boroughs.	Total.		Counties.	Boroughs.	Total.
1831.....	62·5	37·5	100	1832–33....	56·8	43·2	100
				'37–38*	59·6	40·4	100
				'46–47*	57·9	42·1	100
'51*	58·5	41·5	100	'52–53*	55·8	44·2	100
'61.....	56·9	43·1	100	'62–63....	53·2	46·8	100
				'65–66....	54·2	45·8	100
				'68–69....	40·4	59·6	100
'71.....	53·1	46·9	100	'71–72....	39·1	60·9	100
'81.....	52·8	47·2	100	'81–82....	36·9	63·1	100

* From Mr. Newmarch's tables.

APPENDIX B.

Memorandum of Authorities whence the Figures in the foregoing Tables are derived.

ENGLAND AND WALES.

1831–32 '61–62	Counties and boroughs	*Population, number of electors, and number of Members.* Return to House of Commons, $\frac{283 \text{ of } 1864}{259}$ (See also Summary of Electoral Returns (Blue Book), 1866.)
'81	" " "	"Parl. Reformer's Manual," John Noble. Published by the London and Counties Liberal Union, London, 1883.

SCOTLAND.

1831-32....	Counties and boroughs	*Population, number of electors, and number of Members.* Report of Select Com. on Election Expenses, 1834, p. 196.
'61	" " "	*Population.* Census Returns of 1861.
'62	Counties	*Number of electors.* Parl. paper, 252 of 1863.
'62	Boroughs	*Number of electors.* Dod's Parl. Companion, 1863. (No official return.)
'81	Counties and boroughs	*Population, number of electors, and number of Members.* "Parl. Reformer's Manual" (see above).

Memorandum of Authorities—Contd.

IRELAND.

1831–32....	Counties and boroughs	*Population, number of electors, and number of Members.* Report of Select Committee on Election Expenses, 1834, pp. 197 and 198.
'61	,, ,, ,,	*Population.* Parl. paper, 236 of 1868.
'62	,, ,, ,,	*Number of electors.* Parl. paper, 350 of 1864.
'81	,, ,, ,,	*Population, number of electors, and number of Members.* "Parl. Reformer's Manual" (see above).

APPENDIX C.

Papers, &c., on Electoral Statistics, &c., in the "Journal of the Statistical Society."

	Year.	Vol.	Page.
1. Electors registered in the United Kingdom; number and percentage to population, 1834-36	1838	i	122
2. Newmarch, William. On the Electoral Statistics of the Counties and Boroughs of England and Wales during the twenty-five years from the Reform Act of 1832 to the present time	'57	xx	169 and 315
3. Newmarch, William. Electoral Statistics of England and Wales, 1856-58. Part 2. Results of further evidence	'59	xxii	101
4. Hare, Thomas. On the Application of a new Statistical Method to the ascertainment of the Votes of Majorities in a more exhaustive manner	'60	xxiii	337
5. Parliamentary Elections in England and Wales. (*Note*)	'66	xxix	160
6. Parliamentary Constituencies in 1832-68. (*Note*)	'68	xxxi	346
7. Elections. Proportion of the Elective Classes in England. General Election, 1868 [from "Standard" and "Daily News"]	'69	xxxii	102
8. Martin, John B. The Elections of 1868 and 1874	'74	xxxvii	193
9. Droop, Henry R. On Methods of Electing Representatives	'81	xliv	141
10. Ellis, Arthur. The Parliamentary Representation of the Metropolitan, Agricultural, and Manufacturing Divisions of the United Kingdom, with suggestions for its re-distribution	'83	xlvi	59

APPENDIX D.

Table showing the Redistribution of Seats between 1832-81.

Year.	England and Wales.	Counties.		Boroughs.		Universities.	
		Gained.	Lost.	Gained.	Lost.	Gained.	Lost.
1844	Sudbury	—	—	—	2	—	—
'52	St. Albans	—	—	—	2	—	—
'62	Birkenhead	—	—	1	—	—	—
	Yorkshire, W. Riding (2), S. Lancashire (1)	3	—	—	—	—	—
'67	Totnes (2), Reigate (1), Great Yarmouth (2), Lancaster (2)	—	—	—	7	—	—
	Manchester (1), Liverpool (1), Birmingham (1), Leeds (1)	—	—	4	—	—	—
	Andover, Bodmin, Bridport, Bridgnorth, Buckingham, Chichester, Christchurch, Chippenham, Chipping Wycombe, Cirencester, Cockermouth, Devizes, Dorchester, Evesham, Guildford, Great Marlow, Harwich, Hertford, Honiton, Huntingdon, Knaresborough, Leominster, Lewes, Lichfield, Ludlow, Lymington, Malton, Marlborough; Newport, I.W.; Poole, Richmond, Ripon, Stamford, Tavistock, Tewkesbury, Thetford, Wells, Windsor (1 each)	—	—	—	38	—	—
	Darlington (1), Burnley (1), Dewsbury (1), Hartlepool (1), Staleybridge (1), Merthyr Tydfil (1), Stockton (1), Wednesbury (1), Salford (1), Gravesend (1), Middlesborough (1)	—	—	11	—	—	—
	Hackney (2), Chelsea (2)	—	—	4	—	—	—
	E. Cheshire (2), E. Derbyshire (2), E. Devonshire (2), W. Essex (2), W. Kent (2), N. Lancashire (2), S.E. Lancashire (1), Lincoln (2), Norfolk (2), Somersetshire (2), Staffordshire (2), E. Surrey (2); Yorkshire, W. Riding (2)	25	—	—	—	—	—
	London University	—	—	—	—	1	—
'68	Beverley (2), Bridgwater (2)	—	—	—	4	—	—
	Arundel, Ashburton, Dartmouth, Honiton, Lyme Regis, Thetford, Wells (1 each)	—	—	—	7	—	—
	Total England and Wales	28	—	20	60	1	—
	Scotland.						
1868	Glasgow and Aberdeen Universities (1), Edinburgh and St. Andrew's Universities (1)	—	—	—	—	2	—
	Glasgow (1), Dundee (1), Hawick (1)	—	—	3	—	—	—
	Aberdeen (1), Ayr (1), Lanark (1)	3	—	—	—	—	—
	Selkirk and Peebles (consolidated)	—	1	—	—	—	—
		3	1	3	—	2	—
	Ireland.						
1868	Cashel (1), Sligo (1)	—	—	—	2	—	—
	Grand total	31	1	23	62	3	—

Discussion *on* Mr. J. B. Martin's Paper.

Mr. David Chadwick, after congratulating Mr. Martin on his very able paper, said, as a statistical inquiry, he held that the redistribution of seats was worthy of their most attentive consideration. It was a very old subject with him, for twenty-four years ago he published a pamphlet, entitled "Suggestions for the Equitable Distribution of Parliamentary Seats." He did not quite agree with the last portion of Mr. Martin's paper, where he said, "Nor would any apparent symmetry of arrangement be free from drawbacks," if this was intended to disparage an equitable adjustment of representation. As members of the Statistical Society, they were perfectly aware that in the consideration of the relative claims of counties or boroughs, all parties based their suggestions upon statistical facts. They could not move a step without them. In his pamphlet he made an analysis of the alterations effected by the Reform Bill of 1832, and showed that the whole of those alterations were based upon statistical facts. The principle that he laid down was that the franchise, or right to vote, should be the same in boroughs and counties, and when that is done it will be possible to adjust on something like an equitable basis the various claims to send representatives to parliament. These claims rested mainly on population and property. Since writing that pamphlet he had had the advantage of being twelve years in parliament, and he had never heard any sound argument against it. He had recently revised and adapted his suggestions to the present increase in population and value of property. No standard could be applied to small and large boroughs alike, but they could apply a standard, and say that such a population and such a value of property shall jointly be the minimum right to one representative for all small boroughs alike, and they could agree that all counties and large towns and districts shall be entitled to equal representation on the same scale as compared with each other, and should be adjusted every ten or twenty years. He suggested the minimum claim to one member should be a population of 15,000, and property of the gross annual value of 50,000*l.* He worked that out in this way: he took the value of 10,000*l.* property as one parliamentary unit, and 1,000 population as one unit, so that 15,000 population gave fifteen units, and 50,000*l.* property, five units, and together, they got a parliamentary claim of twenty units, which was his standard for the return of *one* member. In the same way a population of 30,000 and an annual value of 100,000*l.* would give a claim of forty units, or two members. Then he took 100,000 population and 500,000*l.* annual value, or 150 units, as the claim for three members; 200,000 and 1,000,000*l.*, or 300 units, the claim to four members; 400,000 and 1,500,000*l.*, showing 550 units, to have five members; and 600,000 and 2,000,000*l.*, showing 800 units, to have six members. The result would be that where a district had a

population of 18,000, with an annual value of only 20,000*l.*, it would still give his parliamentary standard of twenty units to be entitled to one member; and on the other hand, in the case of a small borough, with a population of only 12,000, but property of the value of 80,000*l.*, they would still have twenty parliamentary units, and be entitled to one member. The actual result would be this: twenty-five small boroughs could be brought up to the parliamentary standard for one member by grouping adjoining town districts or parts of counties; twenty-five members could be appropriated for new boroughs of one member each, and to increasing the number of members in large towns, while thirty-one members could be added to the county representation. In Ireland there would be twenty adjustments required by the disqualification of twenty-two members for small boroughs, and he proposed that the whole of those should be added to the Irish counties. That would give an alteration or adjustment of 103 members, and would cause very little disturbance. He held that population and property combined formed the best and the only practicable standard for equitably adjusting parliamentary representation.

Mr. R. B. Martin, M.P., said the real interest of the paper lay in its bringing to their notice a question which was rapidly coming into very serious political importance, viz., whether the basis of votes of the different constituencies shall be local, *i.e.*, by cities and boroughs or counties, or whether they shall be based on equal electoral districts. Though he had some misgivings at even hinting at equal electoral districts, because it would be a totally new departure in English history, yet the difficulties that surrounded anything with a proportional representation except on a purely numerical basis, seemed to increase every moment. When he referred to a proportional representation, he meant not any of those elaborate schemes which had been put forward with a great deal of cleverness and ability, but simply that party politics rendered the weight of that floating population who had no certain politics, so much out of proportion to their real value, that the question had been forced upon the minds of a great many thoughtful men of both parties whether the time had not come either for the reduction of every constituency to portions, each returning one member, or by giving only one vote to each elector, or by some other scheme, it might not be possible to arrange for the adequate representation of the minority. He knew there were gentlemen like Mr. Bright who considered that this was a subject almost to be looked upon with scorn; but when they considered the operation of the present system in counties like Kent, where, out of 18 members, 16 were returned one way and two the other, an altogether anomalous result, considering the actual numbers of electors recording their votes, he thought that the time had come when figures like those which Mr. Martin had placed before them would be found of great value in enabling them to form an accurate idea of the line that the future Reform Bill ought to take. If, as Mr. Chadwick had said, property was at all to be represented, it seemed necessary that the various franchises, such as the 40*s.*

freehold, should be retained; but if, on the contrary, it was to be absolutely excluded, they at once came upon a different basis, and could lay their foundation upon figures such as those placed before them. He hoped the results would be pointed out that would accrue from all these ways of looking at it, whether they were to consider property to be entirely excluded, whether they were to consider it to have a certain weight, or whether it was to have every weight. The latter alternative was practically excluded, and it remained to be seen whether it was to have any weight, and if any weight, what proportionate weight?

Mr. William Fowler, M.P., said about a year ago he gave a lecture to his own constituents on this question, and then there arose the delicate question of how it would affect them, and they were very sensitive on that point. No members would be very anxious to vote for a Bill which was to extinguish their own boroughs, but at the same time they must be willing to adopt some scheme which should be fair all round, and, if necessary, to deprive themselves of some of the power which they now possessed. There were several very great questions involved. He thought that practically the question of property would have to be eliminated. He did not believe that parliament would consider property as a basis of representation; they would take the citizens, who had certain qualifications laid down by parliament, and which were in themselves no evidences of property of any consequence. The habitation of a house was not the evidence of property in their sense of the word; it was an evidence of sufficient means and sufficient position to judge whether any man was fit to represent the occupier in the House of Commons, and that was the conclusion parliament had come to. It laid down a certain qualification in order to get rid of unsuitable persons, but having got the suitable person, it did not ask any questions as to the aggregate amount of property. Then they came to the question of the franchise, whether it was to be residential or a property franchise as well. He was perfectly satisfied himself that parliament would insist on a residential franchise, and would get rid of faggot votes altogether. The main point was what was to be done with the little boroughs? A great many of them would have to go or to be absorbed. No doubt absorption was impracticable in a great many cases, for if they were to try and get electors out of some of the counties to furnish forth all the little boroughs in those counties, they would not find enough for the purpose, and in several cases when they had furnished forth all the boroughs, the poor county would be left with hardly any electors at all. Therefore the scheme, although in some cases it would work very well, in a good many others would be absolutely unworkable. Parliament would not be disposed to have a very symmetrical plan; a number of small boroughs would be absorbed, a number would be given to the counties, and new boroughs would be created from districts that were really towns, though they were not called so. For instance, West Ham, with its 128,000 people, was a town to all intents and purposes, but was now treated as part of a county. Croydon was another case in

point, and St. Helens, in Lancashire. There were 178 urban places, with about 3,700,000 people, which had no separate representation. Several of those he thought would be made into boroughs, and then the great anomalies now existing would be got rid of, and they would have a good working system which would last for a good many years to come. He did not think they would have a grand cut and dried new plan which was to last for ever; he did not believe in it, and was not anxious for it. His own personal feeling was that it was a good thing to have a great variety of constituencies, because there was no other reasonable way in which they could get a variety of interests represented. The object of representation should be that all sorts and conditions of men should be properly represented in parliament, and he knew no other way of doing it but by having a real variety of constituencies. They had been a good deal exercised of late by what was called proportional representation and minority representation. There might be some scheme which he had not seen, but as at present advised he did not like any of the plans proposed. He did not like the three-cornered constituencies for this reason, that he considered that the minority in Cambridge was just as important as far as it went as the minority in Leeds. If the minority principle was correct, it should apply in every borough, so far as he could understand. He was told that the three-cornered boroughs had done great things for them since 1867. He was anxious to be convinced if it was so, but as at present advised he did not like them. Then there was the cumulative vote. He had seen something of that in school board elections, and liked it still less than the other. It was a very nice piece of machinery for giving small cliques of people immense power, but it would not answer in parliamentary representation. If they were to seek for a more uniform system they must have something like a division, so that there should not be more than two members for any place, and they should not have the possibility of having seven members sent for a great borough all of one complexion. They had tried this kind of division in the metropolis, and it worked fairly well. A scheme of that kind would be more practical in its working than anything else that he had seen. He wished it, however, to be understood fully that his mind was in a state of hesitation at the present moment, and he was desirous of every kind of light that he could find on this great and difficult question.

Mr. H. D. Pochin said he should have been very glad if Mr. Martin had given them the principles on which he thought representations ought to be founded. Mr. Fowler had dwelt very much upon what parliament could and would do, but that was hardly within the province of the Statistical Society; they had to tell parliament, what on the basis of correct principles, it ought to do, and then parliament should find out how far it could carry out those principles. The question of population and the distribution of population were not alone to be considered, property was a very important element, and one which he hoped would be taken into account by the House of Commons. There were also

some statistics lately given to the country by Professor Leone Levi which ought to be taken into account, for if they were to get a representation that would give them the best men in the House of Commons, and the best government by those best men, he was satisfied that they must take into account not only population and property, but also education and morality. The last three elements contributed far more to the high standing and prosperity of the nation than the mere numbers of the population. He was sorry to find that Mr. Martin thought that mere numbers should settle the question of the future distribution of the suffrage, for that was not by any means the only element to be taken into account in a country such as theirs, if they were to have a government of the best character, and one best suited to the conditions and circumstances of the people.

Mr. George Howell thought the very element in the paper to which Mr. Pochin objected was the very best that it contained, viz., where Mr. Martin had indicated that population should be the basis of any redistribution of seats. Going back a little anterior to the Reform Bill, they found a time when property had rather more than its full share of representative power, there being an instance in which eleven electors sent twelve members to the House of Commons; they did not want to see that time occur again, and they would agree that under that *régime* they had not any very brilliant legislation. Another thing that seemed to be altogether forgotten by those who advocated some system of property representation was that practically population and wealth went together, and if they adjusted the representation of the country upon the lines of the population, they practically adjusted it upon the lines of wealth also. He thought therefore that they would be perfectly safe in having a distribution of seats based upon population. He objected to the plan of cutting up large towns such as Manchester, Liverpool, or Leeds, into wards, each sending one member, and would prefer to see each of those great centres having its proportion of representatives, allowing every elector to vote for one of those members, but not for the entire six or seven as the case might be. He was also in favour of getting rid of different qualifications of electors; if they had one uniform qualification it would not be very difficult to redistribute the seats, so that each vote would have approximately its proportionate value throughout the entire country.

Mr. H. C. Burdett said any one who came to consider or to draw comparisons from the electorate as it at present stood, must bear in mind that it did not represent actually what it purported to do in figures, and that was on account of the enormous number of duplicates. Another point to be borne in mind was the difference between the day and night populations in large towns, and so important was this factor becoming, that it was really a question as to what would be the result politically of the next election in Birmingham owing to the fact that its population was retreating to the suburbs. It would therefore be found that in making a

change and redistribution they were dealing largely with unknown quantities, and nobody would be able to tell exactly what result was likely to occur. He believed that the question of the representation of minorities would be at once solved if they were to decide that every elector should be entitled to one vote and one vote only.

Mr. H. T. W. Elliott said Mr. Martin had carefully refrained from giving any precise estimate of the number of voters who would be added to the constituencies in the event of the assimilation of the county and borough franchise. He mentioned that possibly the county electorate would be raised 1,800,000, but proceeded to explain that this number might require to be considerably qualified. It was very easy to see that any scheme for the redistribution of seats would involve the transfer of a very considerable number of members from the present borough constituencies to the counties. Assuming that 1,000,000 voters were added to the county constituencies, it would appear that whilst 5,140 electors in the present borough constituencies return one member, it would, under the new *régime*, require 7,765 electors to return a county member; so that the voters in boroughs would possess one and a-half times the weight in the reformed parliament of the new county voters. If they added 2,000,000 to the county constituencies the value of a county vote would be about half the value of a vote in a borough in the event of the addition of 2,000,000 voters to the present county electorate. The result would be that instead of there being 360 members representing boroughs and 283 members representing counties, the counties ought to return 407 members and the boroughs 236; and if they only added 1,000,000 the county members would be 349 and the borough 294. These figures seemed to show that it was possible that great changes might come over the character of their representation, and pointed to the absolute necessity of considering the effect that any assimilation of borough and county suffrages would have upon the redistribution of seats.

Mr. S. Bourne said he differed from the statement that population and wealth generally speaking go together; that was not a very accurate statement of the case. He also differed from the idea that it was the business of the Statistical Society to tell parliament what it ought to do in this matter, because this was a question which must be regulated by considerations entirely outside those which entered into the scope of their usual discussions. He rather thought that property and education might be said to go together to a very great extent, meaning, not such an education as a board school might give, but that education which leisure for thought and study afforded to qualify a man for exercising his judgment maturely upon the subject of choosing a representative. Property ought not to be left out of consideration, because they must remember that one of the functions of the legislature was to raise a revenue, and it was not fair that those who had to pay a very small proportion comparatively towards the revenue should

have an equal voice with those who were its largest contributors. He agreed that the extension of the franchise and redistribution must be considered together. He thought they might distribute the seats ranging over a considerably large area in proportion to the income of the district, because it was out of the income that the revenue was raised. They might then very safely within those areas give an equality of voting simply according to the population. In that way they would get both property and numbers represented in something like a fair proportion, and some such system as that might possibly solve the difficulty. He was glad to hear Mr. Fowler state his approval of a variety of qualifications, because he (Mr. Bourne) believed that a variety of qualifications was a very desirable element. He really could not see why, because the system of giving votes according to the existence of property had been abused in the creation of faggot votes, they should altogether abolish such voting because the owner did not happen to reside within the electoral district in which his property was situated. He joined in thanking Mr. Martin for the good service he had done in bringing these figures together. They would be none the less valuable if some time elapsed before legislation took place. This measure was one which the exigencies of party politics had brought to the front, but it might well be retarded until other more important and pressing business had been transacted.

Mr. F. Hendriks asked whether the gentlemen who talked of property qualification had considered the effects of restricting it wholly to real property? He thought that was a very fallacious test of the ways and means of a country like England. There were a host of interests, shipping, manufacturing, mining, and so on that were not so immediately represented in Schedule A of the income tax or in the poor law ratings; and consequently he saw a very great difficulty in any schemes of qualification for the franchise that were based upon one kind of property, to the exclusion of other kinds of earnings from personal property, whether permanent or temporary.

Mr. S. Bourne said he referred to the distribution of the district according to the income of the voters, because it was the income out of which the revenue was raised.

The President in proposing a vote of thanks to Mr. Martin for his very able and interesting paper, said a subject like this was very suitable for discussion in their Society, not from the point of view of political parties, but from the point of view of information to both sides. By looking at the figures and looking at the effects of what had been done in the past, they might furnish a great deal of information upon which public men might act. Looking at the matter from this point of view, there was one thing which appeared to be brought out by the paper, and which all parties must admit, whatever might be their theories as to what the basis of representation ought to be, viz., that what had made the difficulty as regards representation in this country and many others for the

last fifty years was this, that whatever might be the representation fixed upon at a particular time to give certain members to certain constituencies at a given date, they found after a comparatively short lapse of time that the arrangement no longer secured a representation of the country as it formerly did. This was conspicuously the case at the time of the Reform Bill of 1832. By the year 1866 they also found that the constituencies established in 1832 no longer represented the country as they had done at that time; the fact was that in a growing country like England, growing in population and wealth, they must from time to time, if they were to have representation at all, adjust that representation to the places where the population and the wealth happened to exist. That was the real interest of the paper, the proof as shown by Mr. Martin that at certain periods the population and wealth of the country had been transferred to districts which were not represented, as they would have been with the same proportion of population and wealth at the time when the previous Reform Bill was settled. If they understood this they would quite see that both Conservatives and Liberals might agree that there ought to be Reform Bills from time to time, because whatever they fixed at a particular date, they found ten or twenty years after that circumstances had changed, and they must adapt the constitution to the new circumstances. That was a principle upon which all parties might be agreed, and in stating the facts and applying them a Society like theirs would be of great service, without their intermeddling in any way in the strife of parties. Speaking from the statistical point of view, one peculiarity which they ought to bring to the notice of their public men was this, that in fixing the representation at a particular date, they ought to have regard to the drift of the facts; they should not merely adjust the representation to the facts as they stood at the time of the last census, which might have been two or three years before the time of the Reform Bill, but they should endeavour to adjust the representation in some respects to the proportions of population and wealth as they were likely to be in a few years after that. If they found that a place like London was growing rapidly in population and wealth, and they made population and wealth the basis of representation, they ought to take into account the fact that in the next ten years such a place was going to have a much larger amount of population and wealth than it had. That was a point which had been altogether overlooked in the last Reform Bill; things were then adjusted to the state of facts at a certain time, and then they found perhaps in ten years that the representation no longer adjusted itself to the country as it had been intended. What they ought to take into account therefore was the probable amount and proportion in the immediate future, not in the past, of those things with reference to which they meant to adjust the representation, and if they were to do this, the adjustment would be something very different from what it would be if they were to make it relate to a past state of circumstances alone. He had very much pleasure in moving the vote of thanks to Mr. Martin for his very able paper.

Mr. JOHN B. MARTIN, in responding, thanked the Society very sincerely for the kind way in which they had received his paper. He could honestly say he had taken a great deal of trouble with it, and he could say with equal honesty that in no paper which he had prepared for that or any other Society, had the results been to his own mind so inadequate to the labour which he had bestowed on it. He had laboured under two difficulties: first, the difficulty of bringing everything up to the latest possible date; and secondly, the knowledge that the Government were at the earliest possible moment of the present session about to introduce a Reform Bill, the exact provisions of which were as yet unknown. But for the events in the Soudan and elsewhere, he should possibly have had the wind taken out of his sails by the introduction of the Government measure previous to the reading of his paper, and it would have been excessively disappointing if he had laid down any principle as to what parliament ought to do if the Government had a fortnight beforehand stated what they were going to do. That was the reply he would make to Mr. Pochin when he regretted that he (Mr. Martin) had not laid down the principle on which he should advocate the redistribution of electoral power. Mr. Chadwick had asked why he made no allusion to property. He perhaps ought to have stated in the paper that he thought that subject had been sufficiently ventilated elsewhere. It was most fully elaborated before that Society by Mr. Arthur Ellis in the early part of last session, when he strongly insisted on the anomalous manner in which representation was at present distributed if they took the proportionate distributions of wealth, and showed that the apparent wealth of a district was by no means its real wealth. They all knew the apparently gigantic wealth shown in large centres such as London, owing to the payment of income tax or foreign loans, and so forth, so that the real wealth of London was not of that overwhelming nature in proportion to the whole as it appeared to be by the income tax returns. Mr. Elliott had stated that his figures showed an apparent increase of two million county electors. That was a slight misapprehension of his calculations. He calculated that on a bare rule of three the county electors would be raised from 932,000 to 1,836,000, so that they would be apparently doubled, less various modifications that he suggested, but there would not be the increase that was suggested by Mr. Elliott. He had now only to thank the meeting for the kind way in which they had received his paper.

"*The* Experiences *and* Opinions *of* John Howard *on the* Pre-
"servation *and* Improvement *of the* Health *of the* Inmates
"*of* Schools, Prisons, Workhouses, Hospitals, *and other*
"Public Institutions, *as far as* Health *is affected by* Struc-
"tural Arrangements *relating to* Supplies *of* Air *and* Water,
"Drainage, *&c.*" *By* R. D. R. Sweeting, M.R.C.S. Eng.,
S. Sc. Cert. Camb., *&c.**

CONTENTS:

	PAGE
Introduction	125
His Experiences and Opinions regarding Air	125
(a) Site	126
(b) Ventilation	126
1. Cubic Space	126
2. Superficial Space	129
3. Ingress and Egress	131
(c) Purity	132
(α) Quantity of Water Supply	133
(β) Quality of Water Supply	134
(γ) Cleanliness of Buildings	134
(δ) Personal Cleanliness	134
His Experiences and Opinions regarding—	
Drainage	135
Construction	136
Warming	136
Disinfection	137
Clothing, &c.	137
Isolation of Sick	138
Food	138
Exercise	139
Conclusion	139
Appendix	141

Introduction.

The plan of the essay consists first, of a detailed account of Howard's experiences and opinions regarding the *rôle* played by air, water, drainage, and other matters (viz., construction, warming, disinfection, clothing and bedding, isolation of the sick, food, and exercise) in the hygiene of public institutions, comparing his opinions point by point with those of modern health publicists. Finally his experiences will be recapitulated, and his position as a sanitary pioneer reviewed.

His Experiences and Opinions regarding Air.†

In the introduction to his "State of Prisons," Howard draws attention to the mischievous effects of want of fresh air, and states

* Dr. Sweeting has been good enough to prepare for the *Journal* the following abstract of his essay, to which the Howard Prize Medal for 1883 was awarded.

† F and G in appended bibliography, *passim*.

that on his inspections he observed the feculent character of re-breathed air, and the saturation of his own clothes with effluvia. He refers to the gaoler's practice of stopping up the windows to avoid paying the window tax, and remarks on the incidence of gangrene and scurvy amongst prisoners.

(a) *Site.*

Hanover Prison was too near the river, and below the level of the street; Hereford Bridewell in a confined position; Brecon New Gaol too low and exposed to floods; Toulon Hospital in a populous part of the city, &c., &c.

On the other hand, the Moscow Military Hospital was finely situated on rising ground near the river; the new prison at Plymouth on a hill; Lincoln County Gaol in a spacious area of seven acres; Genoa Lazaretto was detached from other buildings, &c., &c.

Remarks.—Howard thus recommends institutions to be situated on rising ground, and in a spacious area, and deprecates their being placed in close parts of towns, surrounded by buildings or within reach of floods.

Parkes* says, "The diseases arising from faulty habitations are "in great measure, perhaps entirely, the diseases of impure air. "The site may be in fault, and from a moist and malarious soil "excess of water and organic emanations may pass into the "house." Buck† recommends a site near the top of a slope, as it "affords facilities for drainage, free evaporation, exemption from "malaria, and pure dry air."

(b) *Ventilation.*

Table of Cubic Space.

Name of Place.	Part of Building.	Dimensions in Feet.	Total Cubic Space.	Space per Head.	Howard's Remarks.
Rotterdam Rasp-House	Rooms	17 × 11 × 10	1,870	470 to 375	Offensive
„ Admiralty ..	Room	21 × 18 × 15	5,670	515	Sailors looked healthy and well
Amsterdam Lunatic Asylum	„	10 4″ × 7 × 10	721	721	Excellent: a model for a bridewell
Moscow Military Prison	Rooms	29 × 26 × 8	6,032	46	Prisoners pale and sickly
Freiburg Tower	Room	8 × 6 × 6	288	288	Close
London. Wood Street Compter	Men debtors' room	35 × 18 × 16	10,080	258	Too small
Chelmsford County Gaol.....	Work room	37½ × 14½ × 12 5″	6,742	306	Commendable
Horsham New County Gaol	Felons' room....	10 × 7 × 9	630	630	„

* M, p. 346. † A, p. 442.

Table of Cubic Space—Contd.

Name of Place.	Part of Building.	Dimensions in Feet.	Total Cubic Space.	Space per Head.	Howard's Remarks.
Petworth Bridewell	Rooms	17 × 10 × 6	1,020	204	Too small
,, ...	,, ...	18 × 9 × 6	972	194	,,
St. George's Fields Bridewell	,, ...	9 8″ × 5½ × 5⅓	280	280	Commendable
Aylesbury County Gaol	Women's rooms	8 × 5½ × 6	264	264	Too small; several died of small-pox between Howard's visits
,, Bridewell	Lodging rooms	5½ × 4 × 6	152	152	Small
West Wycombe Bridewell	Rooms	7 × 3 × 6	126	126	Not commended
WymundhamBridewell	Dungeon	15½ × 8 × 6	744	124	Inhabited by dirty and sickly women
Warwick County Gaol.	Felons' room....	21 diameter	*4,815	290	Underground; damp and offensive
Leicester ,,	"Cellar"	29½ × 9 × 6 8″	1,752	97	Damp, close, and offensive
Folkingham Bridewell..	Dungeon	10 × 10 × 5½	550	183	Horrid; down 7 steps
Lichfield City and County Gaol	Cells	6½ × 5½ × 8	286	143	Close
Plymouth Town Gaol...	Felons' room....	15 × 8 3″ × 5½	676	225	Men obliged to come in turn to wicket for air
,, ...	,, ...	13 × 5½ × 6¾	479	239	Prisoners almost suffocated
PlymouthRoyal Hospital.....	Wards	60 × 23 8″ × 12 2″	17,133	856	Good
,,	,, ...	60 × 23 8″ × 9 6″	13,452	672	,,
York Castle	Debtors' room	each (16 × 10 × 12) × 22	67,584	938	Airy and healthy
,, ...	Felons' cells	7½ × 6½ × 8½	414	138	Close and dark
Liverpool Borough Gaol.....	Dungeons	6½ × 5¾ × 6	224	74	Underground; close and unhealthy. At earlier visit, gaol fever predicted; 28 afterwards attacked
Vienna General Hospital.....	Wards	61 × 27 × 17	28,000	1,400	Highly commended
St. Luke's Lunatic Hospital	Cells	10 4″ × 8 × 13 3″	1,068	1,068	Commended

* Assumed spherical.

Remarks.—We thus find Howard deprecating cubic spaces ranging generally from 46 to less than 300 cubic feet, whilst on the other hand he commends a range between 360 and 1,400.

Parkes† considers 600 cubic feet sufficient when supplemented by mechanical contrivances, and recommends 1,000 cubic feet as an

† M, pp. 154 and 155.

ideal standard for healthy persons. For hospitals he advises a minimum of 1,300, and an ideal of 2,000 cubic feet.

Morin* advises 150 cubic metres per hour per head for infectious hospitals, (this equals 1,765 cubic feet of space, assuming the air to be renewed thrice in the hour), and 700 cubic metres (= 811 cubic feet) for ordinary hospitals; similarly, 600 cubic feet for prisons, 700 for workshops and assemblies, 350 for barracks, and 176 for children's schools.

Corfield† gives from 750 to 1,000 cubic feet for healthy individuals in dwelling houses.

In addition, Howard noticed that the children at the Amsterdam Orphan House were sleeping three or four in a bed, and suffering from scorbutic and cutaneous disorders; that there was overcrowding at Toledo prison, and the prisoners looked unhealthy; the new prison at Dublin, and the Monmouth County Gaol were crowded, and gaol fever had prevailed in them; this fever also prevailed at Middlewich Bridewell, and scurvy in Bicêtre at Paris, both being overcrowded. Numerous other institutions were found more or less overcrowded, and the inmates stifled. On the other hand, many others, *e.g.*, the Hôtel Dieu at Lyons, Bristol Prison, and Marseilles Lazaretto, were spacious and airy, and the inmates healthy.

Remarks.—We gather from these observations, and those noted in the sixth column of the table, that Howard traced gaol fever, scurvy, small-pox, and skin diseases to overcrowding and deficiency of cubic space.

Murchison,‡ one of the most eminent fever ætiologists, regards typhus fever (of which gaol fever is a synonym), as developed *de novo* under circumstances of overcrowding, combined with defective ventilation.

Scurvy owes one of its exciting causes to overcrowding in the holds of ships.§

Small-pox, though the least amenable of all zymotic diseases to the influence of sanitation, is nevertheless profoundly affected in its course and issue by the supply or withdrawal of an ample quantity of air; it will also spread more rapidly under such conditions.‖ Skin diseases, especially those due to parasites, will be more likely to spread under conditions of overcrowding than otherwise, both by the increased propinquity of individuals, and their lessened power of resistance; boils often appear when nutrition is disturbed by impure air produced by deficient cubic space.¶

As to *loftiness.*—Howard is found to be a strong advocate of

* J, tome ii, p. 42. † B, p. 15. ‡ K, pp. 112 *et seq.*
§ See "Lancet," 1883, vol. i, Nos. 9 and 10. ‖ M, p. 135.
¶ M, p. 133.

lofty rooms, considering 10 to 15 feet insufficient for hospitals, and 7 feet for prisons, and giving 30 as a good model.

Remarks.—The height necessary for rooms will depend upon the amount of floor space; as a rule, 12 feet is considered ample. For hospitals, however, a higher standard is required, and Nightingale,* advises 15 or 16 feet.

The following table is designed to show Howard's experience and remarks with regard to the provision of *floor* or superficial space:—

Table of Superficial Space.

Name of Place.	Part of Building.	Dimensions in Feet.	Total Superficial Space.	Superficial Space per Head.	Howard's Remarks.
Copenhagen State Prison	Room	15 × 14	220	220	Good
Copenhagen Stockthause	Dungeon	each (15 × 7) × 7	735	67	Offensive
St. Petersburg Hospital	Wooden houses	80 × 21	1,680	42 or 33	„
Warsaw Town House	Prisoners' room	20 × 10	200	8	Crowded
Florence Hospital	Sick ward	123 × 33½	4,120	125	Commended
Rome New Prison	Infirmary	73 × 23	1,679	98	Spacious and airy
Valladolid Hospital	Wards	108 × 30	3,240	115	Best in the country
Paris Grand Châtelet	Dungeon	10 8″ × 6 8″	70	17	Not commended
„ Bicêtre	Room	8 × 8	64	64	Too small
„ Bastille	"Iron cages"	8 × 6	48	48	Horrid
Calais Prison	Room	19 × 12	228	13	Dreadfully crowded
Pembroke Prison	„	36 × 16	576	96	Offensive
Clerkenwell „	"Cupboard"	10 × 5	50	25	Close and unwholesome
Borough Compter	Lodging room	16 × 14	224	13 to 10	Not commended
Cambridge Bridewell	Work room	19 × 19	361	21	Fever caused in 1779
Worcester Castle	Felons' room	14 × 12	168	11	Bad and inadequate
Monmouth Gaol	Night „	22 × 15	330	33	Not commended
Exeter High Gaol	Dungeons	each (20 × 12) × 3	720	28	Underground; unhealthy
Launceston „	Whole prison	23½ × 7½	176	29	Offensive
Knaresborough Gaol	Room	8 × 5	40	7 or 6	Overcrowded
Kingston Gaol	Debtors' ward	22½ × 16½	371	62	Large
„ Bridewell	Rooms	12 × 12	144	24	Very offensive
Durham Gaol	Debtors' ward	each (10⅓ square) × 2	212	10	Damp; unhealthy
„	Dungeons	7 × 7	49	16	Prisoners sickly
„	Great hole	16½ × 12	198	33	Prisoners looked sickly
Carlisle County Gaol	Felons' night room	11 × 9	99	12	Inadequate
Preston Bridewell	"Boxes"	each (6½ × 6) × 11	429	28	Offensive
Chester Castle	Cells	7½ × 3	22	7 or 5	Reminded him of "Black hole" of Calcutta

* L., p. 16.

Table of Superficial Space—Contd.

Name of Place.	Part of Building.	Dimensions in Feet.	Total Superficial Space.	Superficial Space per Head.	Howard's Remarks.
Flint County Gaol	"Black holes".	5 × 4	20	20	Not commended
Ruthin „	Cells	each $(7\frac{1}{2} \times 6\frac{1}{2}) \times 4$	192	48	Close and inadequate
Carmarthen Castle	„	7 × 6	42	42	Close
Glasgow Tolbooth	Rooms	$6\frac{1}{2} \times 6$	39	39	Offensive
Edinburgh House of Correction	„	each (12 × 6) × 3	216	4	Rooms very close
Edinburgh Old People's Hospital	Room	$11 \times 8\frac{1}{2}$	93	93	Good
Dublin Marshalsea Prison	„	14 × 13	182	30 or 23	Not commended
Limerick Gaol	Felons' room	22 × 20	440	7 or 6	Overcrowded
Castlebar „	Room	21 × 17	357	8	Prisoners almost suffocated
Rome House of Correction	Lodging room	10 × 8	80	80	Good
Howard's House of Correction	Room	$12\frac{1}{2} \times 8$	100	100	His own recommendation

Remarks.—Howard is thus seen to have deprecated superficial space ranging from 4 to 96 square feet, whilst he recommends a range of between 98 and 220 square feet.

Parkes* lays down that the superficial should not be less than one-twelfth of the cubic space; hence he would recommend 50 to 85 square feet for healthy persons. For hospitals he advises 100 to 120 feet of superficial space,† and quotes Acland as giving an absolute minimum of 72.‡ The Privy Council in 1872 recommended 144 square feet of floor space per head in hospitals for infectious diseases.§

Again, in various hospitals, *e.g.*, Cronstadt, Bologna, and Witowka, he found the beds crowded close together; a fever mortality prevailed at the latter place. Scurvy and putrid fever also prevailed at Moscow Hospital, where the beds were excessive. Further, as to *width* of wards, he deprecated the narrow corridors at Hertford New Gaol (4 feet), the narrow wards of St. Thomas's Hospital, City of London Lying-in Hospital, &c., which averaged only 17 feet; gaol fever was prevalent at some of them. On the other hand, he advises ample separation of beds, and commends a width of over 20 feet, which he found at Toledo and St. George's Hospital, London.

Remarks.—The necessity of proper separation of beds is especially marked in hospitals, for convenience of medical attendance and nursing. The necessary width of wards will vary with the

* M, p. 156. † M, p. 351. ‡ M, p. 156, footnote.
§ Memorandum on hospital accommodation.

length and height, but in well arranged hospitals ranges from 26 to 30 feet.* Nightingale† recommends that the distance between opposite windows should not exceed 30 feet, and advises 26 feet. The remarks previously made under cubic space‡ with respect to typhus fever (of which "gaol-fever" and "putrid fever" are synonyms) and scurvy will also apply to superficial space.

Next, as to *ingress* and *egress*.

Howard's experiences upon the matter of the entrance of fresh and the exit of foul air were vast, varied, and searching. Thus, to take a few examples out of many, the windows at the courts of justice, Sweden, were shut; there was only one at Trieste Prison; they were not opposite at Riga Military Hospital, and were obstructed by bars at the Maidstone County Gaol. There were holes only at Liverpool Bridewell; these were quite inadequate at Chester Castle, and altogether absent at Cronstadt Marine Hospital. None of the windows at the Hôtel Dieu, Lyons, were open, and the upper sashes at Wexford County Infirmary were not moveable. On the other hand, he found large apertures over the doors, and opposite windows at Hanover Prison; high semicircular windows for promoting circulation of air at the Augsburg House of Correction; an iron grated lattice in the roof of the room at Guildford Bridewell for the purpose of freshening it; an aperture in the ceiling of the chapel at Ipswich County Gaol, covered by a small turret, which supplied fresh air. Again, at Newport House of Industry, there was a mechanical contrivance to prevent nurses closing the upper sash. At the St. Petersburg Military and Marine Hospital, there were nine windows on each side of the room, and apertures over the two opposite windows at each end. At Guy's Hospital, there were ventilators in the ceilings which communicated with the chimneys, and drew off foul air; at Bedford County Gaol a sail ventilator was in use. As regards the arithmetical expression of his views, he deprecates apertures of the dimensions 5, 27, 32, 35, 40, 42, &c., &c., square inches, and commends 1,008, 648, 576, 558, 216, 196, 126, 112, &c. He also approves window-areas of 2,200, 4,200, and 8,400.

Remarks.—Howard thus advises ample and opposite windows, and their being opened. He also recommends supplementary ventilation by apertures near the ceiling, and approves of artificial ventilation in certain cases.

Parkes§ says: "... windows should be placed, in all cases "where it can be managed, at opposite sides of a room. The "windows should open at the top." The same authority,‖ and Corfield,¶ give 24 square inches of inlet, and the same of outlet per

* M, p. 356.
† L, p. 36.
‡ *Vide antea.*
§ M, p. 163.
‖ M, p. 166.
¶ B, p. 24.

head as necessary for proper ventilation, so that, in comparing these numbers with Howard's, we must take 48 square inches of total inlet and outlet area per head as representing their opinions. The window-areas that Howard commended presumably comprised the total ventilation; when supplemented by other modes, natural or artificial, a window-area of from 700 to 800 feet is usually considered excellent.* For school rooms, Buck† advises the window-area to be one-sixth of the floor space, or from 300 to 350 square inches for each pupil.

We next come to the question of *purity*.

Howard found the rooms close at Clerkenwell Bridewell, where gangrene prevailed; also at the Savoy where distemper occurred commonly. Those at Gloucester Castle also partook of this character, and both small-pox and gaol-fever had prevailed. Those at Launceston County Gaol were offensive, and gaol-fever had been incident upon the inmates; the same conditions of impurity existed at the Copenhagen Orphan House, where cutaneous disorders were rife. The faces of the inmates of Stockholm Spin House were sickly, and scurvy was prevalent; the rooms here too were offensive. Small-pox prevailed at Leicester County Gaol, which contained offensive rooms. Again, the close infectious air of Avignon Hospital gave rise to "hospital fever," and at St. Jean de Jerusalem Hospital, Malta, the walls of which were offensive, "slow fever" prevailed to a great extent. Further, Howard notes the absence in many cases, and in others the inadequate size of the court. On the other hand, the rooms of the Leuwenweek Gasthuys were cool and fresh; the wards at the Royal Infirmary, Edinburgh, pure (and the mortality consequently low); those also at the San Juan Baptista Hospital, Toledo, were airy. Lastly, he notices with commendation the provision of a suitable court in many public institutions.

Remarks.—We thus find Howard deprecating close, offensive, loathsome, and damp atmospheres in public institutions, and tracing pale sickly countenances, "gaol fever," "hospital fever," "slow "fever," scurvy, small pox, gangrene, septicæmia (?) and cutaneous disorders to their pernicious influence. Conversely, he commends a cool, fresh, pure atmosphere, showing how it tends to lower mortality; and *inter alia* advises a spacious court.

Parkes‡ says that impure air affects health, influences mortality, and regulates recovery from disease, and draws attention to the pallor produced by vitiated air.§

Typhus, *alias* "gaol fever," and "hospital fever" is dependent for one of its most potent factors upon air rendered impure by

* See Report of Hospitals Commission for particulars of Fulham Hospital.
† A, vol. ii, p. 613. ‡ M, p. 105. § M, p. 133.

overcrowding.* "Slow fever" is an old term for enteric or typhoid fever, between which and typhus the greatest confusion existed for many centuries (see remarks under Drainage). The recent discussion at the Royal Medical and Chirurgical Society elicited the opinion from many speakers that the impure air of the holds of ships was one of the causes of the outbreaks of scurvy in Arctic explorations.† The severity of many diseases is known to be increased by impure air,‡ especially that of a sick ward, and hospital gangrene is not unlikely to appear under such conditions;‡ moreover, gangrene, due to arterial thrombosis, is a not infrequent complication of typhus§ (hence probably some of the cases of gangrene of which Howard made special note were "gaol fever"). The same remarks as to the influence of cubic and superficial space upon small-pox will apply to the matter of the purity or impurity of the air supplied. Cutaneous affections, again, will be more prone to occur, and to spread in an impure atmosphere. A spacious court in connection with an institution will improve the quality of the air circulating in it by diluting and oxidising the impurities engendered therein.

His Experiences and Opinions regarding Water.||

In the introduction to his "State of Prisons," Howard draws attention to many prisons having no water, and to the fact that in others where there is a water supply the prisoners get only what the attendants bring them, this amounting in one case which came under his observation to three pints only per diem.

This branch of Howard's inquiries is divided into water supply and its corollary, cleanliness, the former being further subdivided into quantity and quality, and the latter into cleanliness of buildings and of persons.

(*a*) *Quantity of Water Supply.*

Howard found no water at all in many of the institutions he inspected. It was deficient at Dunkirk; scanty at Chesterfield Gaol; the pumps were outside at York Castle; and out of order at Bristol Newgate. On the other hand, the Milan House of Correction possessed a stone bason well supplied with water; there was a fountain for constant supply at Solothurn Prison; the Real Hospital General, Madrid, contained reservoirs in the court; the court of the New Ludgate contained a cistern; Beverley Bridewell was provided with a pump, and Richmond Gaol with a well.

Remarks.—Howard thus advises an abundant and constant supply, with accessories in the shape of reservoirs, cisterns, fountains, pumps, &c. The former necessity is obvious and fundamental, and should not be less than twenty-five gallons per head *per diem*.¶

* K, pp. 112 *et seq.* † See "Lancet," 1883, vol. i, Nos. 9 and 10.
‡ M, p. 136. § K, p. 213. || F and G, *passim.* ¶ M., p. 5.

The advantages of the constant system are avoidance of contamination by storage, and prevention of communication with sewer;* its disadvantages are the occasional shutting off of water and waste.*

(β) *Quality of Water Supply.*

Howard found the well water of Edinburgh Castle brackish; at Cavan County Gaol, the well water was mixed with rain water from the street; at Hertford Bridewell, the water was bad. On the other hand, the water at Worcester Castle was excellent, and that at Durham Bridewell, at Ruthin County Gaol, and at Trim School was good.

Remarks.—Brackish water often produces dysentery, according to Lemprière, quoted by Parkes;† drinking water mixed with rain water from the street would be liable to contain the impurities of the latter, derived during descent and from the ground.

(γ) *Cleanliness of Buildings.*

He found many places dirty, and some of them swarming with vermin. Amongst them, may be noticed the Copenhagen Orphan House, where he found the inmates pale and sickly; Miscara School, where itch prevailed; Arkton School, where "scald head" was rife; Stockholm Spin House, where scurvy was common; and Exeter Bridewell, where gaol-fever repeatedly broke out.

Remarks.—Howard thus traces pale sickly faces, itch, "scald "head," scurvy, and gaol-fever amongst the inmates to this cause. (See following heading.)

(δ) *Personal Cleanliness.*

He draws attention to the absence of proper bathing accommodation in many institutions, and advises frequent washing and bathing, and change of linen, the latter being conspicuously absent amongst the Copenhagen slaves. At Innishannon School, where the children were dirty, itch prevailed; the "evil" at the Dublin Foundling Hospital; "sore heads" at Castle Carberry School; "scald head" at Milltown Road Nursery, Dublin; cutaneous eruptions at the Munster Nursery; ophthalmia at Connaught Nursery; in all of which places the inmates revelled in dirt and uncleanliness.

Remarks.—Howard thus traces "itch," "evil," sore heads, "scald head," cutaneous eruptions, and ophthalmia to neglect of personal cleanliness.

Guy‡ includes this amongst the conditions promoting scurvy.

The share that uncleanliness has in producing typhus fever (or "gaol-fever") is insisted upon by authorities, *e.g.*, Murchison.§

* M, pp. 13 and 14.
† M, p. 42.
‡ D, p. 141.
§ K, p. 115.

The spread, if not production, of cutaneous affections and ophthalmia would be greatly enhanced by such neglect; the itch insect is known to attack preferably persons who neglect cleanliness; and sore heads and eyes are common where there is a collection of dirty people, especially children. The "evil" or scrofula is recognised to be amenable to well directed hygienic measures, of which cleanliness is an important element (see Quain's and Copland's Dictionaries of Medicine). "Scald-head," or the follicular inflammation of the scalp known as "kerion," the chief features of which are tumefaction of the surface and exudation from the hair follicles, will obviously be affected both as regards its course and spread by attention to or disregard of cleanliness.

Parkes* says, "The skin must be perfectly clean and well "clothed." He places cold bathing foremost as a part of cleanliness, and considers it an aid to health by improving the nutrition of the skin.

His Experiences and Opinions regarding Drainage.†

In the introduction to his "State of Prisons," Howard states that for the most part he found an absence of sewers in the public institutions he visited, and that when he found them they were usually offensive.

Thus, there were none at all at Harwich and Monmouth Town Gaols. At the De Mamelocker Prison, Ghent, and Buntingford Bridewell they were offensive; at the "Maison de Force," Ghent, improperly placed, and at Stafford County Gaol, not flushed. Gaol fever occurred at Marlborough Bridewell, where these precautions were neglected. On the other hand, the drains at Breda House of Correction were well constructed; the fall was good at the Royal Hospital, Plymouth. Again, they were detached from the house at the Copenhagen Great Hospital, and well flushed at Ipswich county gaol. Further, Howard found in many places no latrine accommodation at all; in others, the closets were very offensive. For all he recommends ample flushing.

Remarks.—Howard here deprecates offensiveness of drains, sewers, and closets, and their being improperly placed and not flushed. He advises drains and sewers to be well constructed, with a proper fall, detached from the house, and regularly flushed. The occurrence of gaol-fever is traced to the neglect of these precautions. Modern authorities fully endorse Howard's recommendations. Thus, Parkes advises good construction,‡ proper fall,§ disconnection from the pipes of the house,‖ and regular flushing.¶ Amongst sanitary engineers, Eassie** insists upon these points. As regards

* M, p. 457. † F and G, *passim*. ‡ M, p. 364. § M, p. 370.
‖ M, p. 365. ¶ M, p. 374. ** C, chap. ii.

the causation of gaol-fever (or typhus) by neglect of these points, Howard probably shared in the confusion which existed until recently between this and enteric fever; hence probably some at least of these cases were really instances of the latter disease. It is disputed whether the disease can arise *de novo*, but it is certain that such mechanical adjuncts as Howard commended will obviate the decomposition of excreta, and entrance of impure sewer air into houses.

*His Experiences and Opinions regarding Construction.**

Howard strongly deprecates dampness of buildings, a condition which he found at the Liège Old Prison. He also declares against earth floors (Falmouth Town Gaol), brick floors (Edinburgh Infirmary), and small stone paving (Downpatrick County Gaol). On the other hand, he commends planking of rooms, as at Amsterdam City Hospital, raising of floors (Military and Marine Hospital, St. Petersburg), and flagging of courts (Coventry City Bridewell). Staircases he advises to be of stone, of good width, and of gradual rise, items which he found at Kildare County Gaol, St. George's Hospital, London, and other places. He also recommends the detachment of the infirmary from the main building.

Remarks.—Parkes† gives as one of the conditions ensuring healthiness of habitation, dryness of foundation, walls and roof; on damp soils the flooring should be raised two feet from the ground. Eassie‡ deprecates a humid subsoil, and banking with damp earth. The importance of an infirmary being detached is manifest, both in the interest of the sick and the healthy; and a strong convenient staircase is a desideratum of comfort, and thus indirectly a factor of health.

His Experiences and Opinions regarding Warming.§

Howard found no chimneys or fire places at Hitchin Bridewell, or Leeds Town Gaol, &c.; at Bicêtre, where no fire places existed, hundreds perished of cold in 1775. There was no fuel or firing at Cardigan County Gaol, Mullingar County Infirmary, and other places. He commends stoves, which he found at Solothurn and Hanover Prisons.

Remarks.—The importance of artificial warmth, both to the healthy and the sick, (and especially those convalescing from illness), is insisted upon by Parkes.‖ A fire place with a chimney is known to subserve a double purpose, (*a*) warming, by direct radiation of heat, and (*b*) ventilation, by extraction of foul air.¶ Where fire places cannot be provided, stoves do good service, and

* F and G, *passim.*
‡ C, p. 4.
‖ M, pp. 394 and 395.
† M, pp. 346 and 347.
§ F and G, *passim.*
¶ M, pp. 172, 395, and 396.

are economical, though, especially when closed, they are apt to dry and char the air.*

His Experiences and Opinions regarding Disinfection.†

Howard strenuously insists upon the importance of scraping and limewhiting of rooms, which he saw neglected in a great many institutions; the Irish prisons were prominent offenders in this matter, although an Act of Parliament expressly ordered it. He quotes the opinion of the senior physician of the Royal Infirmary at Edinburgh, that "putrid fever" had been eradicated by this means. He notices an oven at Gosport Bridewell for baking clothes. Other disinfectants that he remarked were spruce fir at Stockholm Spin House, oil of tar at the Plymouth New Prison Infirmary, vinegar for the disinfection of letters at Marseilles Lazaretto. He also alludes to the practice of quarantine, (for which the Lazarettos were established).

Remarks.—Parkes recommends scraping and washing rooms with hot lime to purify them after infectious diseases‡; and states that the best mode of purifying clothes and bedding is by the agency of heat.§ Spruce fir, which belongs to the pine species, contains numerous oily bodies of the terebene group, which have disinfectant properties.‖ The good effects of oil of tar is due to carbolic and cresylic acid¶; those of vinegar to its power of neutralising ammonia and delaying putrefaction.¶ The utility of quarantine is a debated point, though it is said to have prevented the spread of plague and cholera.**

His Experiences and Opinions regarding Clothing and Bedding.††

Howard found the French and American war prisoners at Pembroke badly clothed; the inmates of Castlebar County Infirmary destitute of linen. There was no bedding at Portsmouth Town Gaol; the bed covering at Maidstone County Gaol was deficient. Even straw was absent at Salisbury City Gaol. The beds at Cherson Hospital were dirty, those at Navan County Infirmary old, and at Armagh County Hospital badly placed. On the other hand, the inmates of the Antwerp House of Correction were well clothed; there was an abundance of linen at Christ's Hospital, London, and of bedding at Horsham Gaol. The bed covering was ample at the Riga Slaves' Prison, and plenty of straw was found at York Castle. Lastly, Howard deprecates wooden bedsteads, (such as he found at Guy's Hospital), which foster vermin, and recommends iron cradle bedsteads, such as were in use at the Royal Hospital, Plymouth.

* B, p. 33. † F and G, *passim.* ‡ M, p. 506.
§ M, p. 499. ‖ *Cf.* Kingzett, "Nature's Hygiene," London, 1880.
¶ M, p. 505. ** M, p. 469, foot note. †† F. and G., *passim.*

Remarks.—The necessity of proper clothing for protection against extremes of temperature, and to check too rapid evaporation from the skin is unquestioned, and the provision of well constructed beds and ample bedding conduces to comfort, cleanliness and health.

*His Experiences and Opinions regarding Isolation of the Sick.**

Howard strongly advises the provision of an infirmary. He found none at Oxford and Worcester Castles, amongst many others. The rooms of such an infirmary he advises to be large and airy, as he found them at the Greeks' Plague Hospital, Smyrna; not small, as he noticed them to be at Hertford New Gaol. He recommends also the proper isolation of infectious patients, which he failed to notice carried out at the New Prison, Dublin. Again, he advises separation of different diseases in hospitals. Thus the surgical and fever cases were mixed at Savona Hospital, and there were no delirious wards at Malta Hospital. On the other hand, the Grand Duke's Hospital at Moscow contained venereal wards; skin cases and phthisis were separated in different wards at the Civitia Vecchia Hospital. Lastly, he refers with approval to the establishment of convalescent establishments in connection with the Marine Hospital, St. Petersburg, the Hotel Dieu, Lyons, and many others.

Remarks.—A good infirmary is an indispensable adjunct to a well arranged institution, serving both for the proper treatment and nursing of the sick, and for the isolation of those likely to spread epidemic disorders. And all authorities agree in apportioning a larger amount of cubic space to the sick than the healthy.† Modern hospitals invariably contain separate wards for different diseases, *e.g.*, medical and surgical cases, eye and lunatic wards, &c. Convalescent homes serve both to complete the cure of the patient, by placing him under more favourable conditions, and to relieve pressure on the hospital, and thus to minimise the risk of overcrowding, and consequent production of septicæmia. Several of the general hospitals of London have such institutions connected with them, and the Royal Commission on small-pox and fever hospitals advises their creation in connection with the metropolitan hospitals for those diseases.‡

His Experiences and Opinions regarding Food.§

Howard observed bad and insufficient feeding at Plymouth New Prison and other institutions, and remarked upon the incidence of "fever." Salt provisions were in vogue at Stockholm Spin House, and scurvy was prevalent. The bread at Moscow Military Hospital was badly made, and that at Forton Prison deficient in weight;

* F and G, *passim.*
† *Vide* A, B, J, K, and M, *passim.*
‡ Blue Book, 1882, p. xxxiii.
§ F and G, *passim.*

scurvy prevailed at the former. Vegetable food was conspicuous by its absence at the Dublin Blue Coat Hospital, and animal food predominated in the dietary of the London Hospital. On the other hand, the feeding was good at Trieste Castle, and the bread of good weight at Deal Prison.

Remarks.—The main cause of Relapsing or Famine fever is insufficient and bad feeding*; and this is also one of the exciting causes of typhus.† Scurvy is produced by a diet poor in the salts whose acids form carbonates in the system, and is obviated or benefited by fresh meat and vegetables, which contain the requisite acids; it is also favoured by monotony of diet; and bad bread has assisted in its production in Arctic explorations.‡

His Experiences and Opinions regarding Exercise.§

Howard found prisoners locked up in close confinement at Stockholm Spin House and Petworth Bridewell; scurvy was prevalent at the former place, and debility at the latter. He recommends regular daily exercise in an airy court, and mentions with approval the fine exercising area at Norfolk Hospital.

Remarks.—If exercise is not taken, the state of nutrition of the body becomes impaired, the organs also lessen in size and degenerate; moreover it is of importance for elimination of surplus carbon. Epidemics of scurvy have owed their causation in part to crews being kept confined in close holds of ships for long periods at a time, without fresh air or exercise. (See "Lancet," *loc. cit.*)

Conclusion.

We have thus followed John Howard through the details of no less than seventeen matters relating to public health, with minor ones springing from them, and have compared them with the opinions of modern hygienists.

Thus, with respect to the site of an institution, we find him anticipating Parkes and Buck. His opinion concerning the amount of cubic space necessary for health coincides with the ideal standard of Parkes, and the recommendations of Morin, a pre-eminent authority on ventilation; and his appreciation of the potency of overcrowding in the ætiology of typhus and scurvy, and the spread of small-pox and skin affections, is borne out by Murchison and others. In the matter of loftiness of hospital wards, he advises even a higher standard than Nightingale. As regards superficial space, he goes beyond Parkes and Ackland, and commends rooms of large superficial space. His advice as to width of wards coincides with the teaching of Parkes and Nightingale. His

* K, p. 333.
† K, p. 116.
‡ M, p. 484.
§ F and G, *passim.*

remarks upon the principles of ingress and egress tally with the opinions of Parkes, and his numerical experiences agree with the figures of Parkes, Buck and Corfield. On the matter of purity *versus* impurity, he is in accord with Parkes and Murchison.

He holds an orthodox opinion as to the superiority of the constant supply of water, and recognises the advantage of its being good in quality. The part that he considers uncleanliness to play in the causation of typhus and scurvy is acknowledged by Murchison and Guy.

Parkes and Eassie endorse Howard's mechanical recommendations concerning drainage, and Murchison favours the doctrine of the spontaneous origin of enteric fever, which Howard appears to have held.

Authorities bear out his remarks on construction. Parkes and Corfield endorse and amplify Howard's opinions regarding warming. The modes of disinfection that Howard commended are supported by Parkes, and practised to-day in every house and hospital. Parkes amply confirms his opinions regarding clothing, &c. Howard's views on the isolation of the sick are advanced and enlightened; his extolment of infirmaries, his recognition of the increased amount of cubic space required in them, his knowledge of the details of hospital administration all demonstrate this. With respect to food, we find Howard taking a foremost rank as an ætiologist of relapsing and typhus fevers and scurvy, his opinions anticipating those of Murchison and Parkes. He is justified in his views as to the deleterious effects of want of exercise by Parkes, and practical authorities on scurvy bear out his observations regarding the part played by deficient exercise as a factor of the disease.

In appreciating Howard's character, we recognise not only the *philosopher*, as shown by his studies in medicine and meteorology; not only the *philanthropist*, of pure, unselfish endeavour, unalloyed with vulgar greed of gain or personal ambition, and of far-reaching cosmopolitan sympathies; not only the *social reformer*, who changed the administration of gaols and the habits of their inmates; but also the *sanitarian*. For he it was who assisted, with Baker, Blane, Jenner, Pringle and others in the inauguration of that "dawn of "practical hygiene," which is fast attaining its noon-day splendour. We have compared his opinions point by point with those of the teachers of the present time, and find so remarkable a coincidence that it seems more in accordance with accuracy and breadth of criticism to represent Howard as supplying some of the hygienic foundation of the nineteenth century, and as affording suggestions which have led to scientific investigation at the hands of earnest workers, than as one whose views are historically curious or

fortuitously correct. The part which foul air played in the spread of disease was a matter which agitated men's minds at the close of the last century, and Howard takes a foremost place in the elucidation of its potency in this respect, and especially with regard to typhus fever. He also did much to throw light upon the ætiology of scurvy, and divides with Blane the honour of having placed this disease under control. He assisted, too, in causing the emergence of the people from the dirtiness and neglect of personal hygiene bequeathed by the middle ages. The connection, again, that he traced between imperfection of drainage and fever (probably enteric) marks him as a forerunner of the ætiologists of to-day.

His claim, therefore, to be considered a sanitary pioneer rests on so firm and ample a foundation that none will be found prepared to assail it.

Finally, in reluctantly severing an association with the spirit of Howard as breathed in his works, which has extended over several months of infinite pleasure and profit, and resulted in the above, at the best imperfect and unworthy, exposition of his genius as a preventive philanthropist, one may be forgiven the adoption of Dellille's famous apostrophe to him :—

> "Reviens, il en est temps, reviens, cœur généreux ;
> Le bonheur appartient à qui fait des heureux.
> Reviens dans ta patrie, dans une paix profonde,
> Goûter la liberté que tu donnais au monde.
> Ton œil chez aucun peuple, au palais d'aucun roi,
> N'a rien vu d'autant rare, et de si grand que toi."

APPENDIX.

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MISCELLANEA.

CONTENTS:

	PAGE
I.—Financial and Commercial History of 1883	142
II.—The Present Position of Spain compared with other European Countries	150
III.—The Rationale of Exchange.	164
IV.—Record of Family Faculties.	166
V.—The Fires in London during 1883, and the Metropolitan Fire Brigade	166
VI.—German Literature of 1882 and 1883	171
VII.—English Literature in 1883	171
VIII.—"The Progress of the Working Classes in the Last Half Century"	174
IX.—Quarterly List of Additions to the Library	175

I.—*Financial and Commercial History of* 1883.

The following is taken from the Supplement to the *Statist* of the 26th January, 1884, in continuation of similar extracts for previous years—commencing with the year 1878:—

"The year 1883 has been a disappointing one in business. Writing a year ago, in our review of the financial and commercial history of 1882, we anticipated a considerable amount of dulness during the year. At the same time, looking at the low prices and the length of the period in which they had been low, we were rather inclined to anticipate the possibility of some revival before the year was out, especially if the harvest should be good. What has now to be recorded is that the dulness has continued all through the year, and in many respects the aspect of business was less favourable at the end of 1883 than it was at the beginning. Prices, as a rule, are even lower than the low level at which they stood at the end of 1882, many serious failures and collapses have occurred, and there are indications of an approaching diminution in the amount of business such as hardly existed when we wrote a twelvemonth ago.

"At the same time, it should be distinctly understood that, tried by all the usual tests, the year 1883 has been a good one for the masses of the community. Both production and consumption have been on a very large scale. We find, in fact, that large as was the business done in the two previous years, the business done in 1883 cannot have been less. For instance, the traffics of the leading railways of the United Kingdom show an increase, which was maintained almost all through the year, of between 20,000*l.* and 30,000*l.* per week, the increase being altogether somewhat over 2 per cent. Similarly, the foreign trade of the United Kingdom has been maintained at the high level, or nearly at the high level, of the two previous years. The imports, in fact, show an increase of nearly 14,000,000*l.* over the imports of 1882; the exports of British and Irish produce show only a fractional diminution of somewhat

less than 2,000,000*l.*, which may be largely accounted for by mere fall in price. The revenue has also been well maintained, and exhibits a moderate increase compared with the previous year. All these are signs that the masses of the community cannot have done very badly during the year. It is plain, also, from the history of the year, which has been to some extent one of strikes for an increase of wages, that the workmen, although these strikes have not, as a rule, been successful, have felt themselves to be fully employed. Still, among merchants and employers of labour, among the capitalist classes generally, the year will hardly be regarded as a profitable one. The common complaint has been that with a large volume of business the rate of profit has been low, and for this complaint there is evidently a good deal of foundation. Prices in the leading wholesale markets have receded a good deal during the course of the year, especially in the last few months. This condition of things cannot have been favourable to holders. Many people must have suffered by the fall in prices. The state of the stock markets has also shown that there have been no surplus profits available for investment. While the better classes of securities have held their ground, or perhaps have advanced a little, there has been great weakness in all the speculative markets on the Stock Exchange, and the new issues have not been on the scale of the two previous years, nor have they been so successful. To sum up, what we should say of the year 1883 would be that, judged economically, and taking into consideration the interest of every individual in the country, it has been a good year. There have been vast production and consumption, and the people as a whole have been well off. But the special classes who run the industrial machine as it were—the merchants, manufacturers, and capitalists generally—have not been specially favoured. Their profits at best have been stationary, and in many directions heavy losses have been sustained. As the running of the machine, however, depends upon these classes, the result is that the prospect for the moment is not so good as if they had been making profits, and were more inclined therefore to take greater risks and go on increasing their production. The languor and dulness now existing are quite natural, notwithstanding that 1883 must be written of generally as a fairly prosperous year.

"In our present review we propose to notice these two aspects of the year 1883,—first of all, the great amount of business actually done and the actual prosperity of the masses during the year; and second, the special signs of low profits having been made by the capitalists, and of the actual declension in the amount of business at the present time.

"*The Prosperity of the Year.*

"On this head we have already noticed such general signs as the increase in the railway traffic returns and in the revenue; and looking at the history of the leading industries of the country in detail, we find that these signs are fully confirmed. Thus, in the iron trade the production of pig iron in the year is estimated at no less than 8,250,000 tons, which is only about 200,000 tons less

than the annual production of the two previous years. The iron trade, as we shall see, is one of those which for many months of the year has been most depressed, and in which there has been a sensible fall of prices; but yet judged by actual results for the year, it is evident that production, as we have said, has been on the largest scale. At the same time markets have been found for this enormous production, the tendency during the year having been rather for stocks to decline. It is obvious then that the general industry of the country has been well maintained, iron being peculiarly an instrumental article, which is dependent on the prosperity of other branches of trade. The improvement is all the more remarkable because the export of the iron produced to foreign countries has rather diminished during the year, so that there can be little doubt of an increase in the home consumption having actually taken place. We know in fact that the main consumption at home, namely, in shipbuilding, has been on as large a scale in 1883 as it was in the two previous years. It is calculated that the tonnage built during the year must have been about a million and a quarter tons, which is a slight increase over the large figure of 1882. The number of vessels now under construction is less than it was a twelvemonth ago; but the actual out-turn of the year has been what we have stated.

"Another sign of the great actual prosperity in the trade of the country generally in 1883 is furnished by the coal trade, which has undoubtedly in all parts of the country been moderately prosperous during the year. The actual figures are not yet available; but there can be no doubt that the production of coal in 1883 will be found to have been larger than in any previous year. Curiously enough, although iron has lately been tending to fall in price, and is lower now than it was at the beginning of the year, the price of coal has rather tended to rise during the year, though it is somewhat lower at the present time than it was a few months ago.

"Passing to the leading textile trades, it appears, according to Messrs. Ellison and Co.'s annual review of the cotton trade for the season 1882-83, that in that season the consumption of cotton in Great Britain was very nearly as large as it had been in the previous season, the figures being 3,426,000 bales for 1882-83, and 3,439,000 bales for 1881-82. Practically then the amount of business in the two seasons was identical, and that amount was much the highest of any previous season, the nearest approach to it having been in the highly prosperous year 1872-73. As compared with 1878-79, in which the consumption was only 2,600,000 bales, an enormous increase is shown. Looking at the returns of the foreign trade, we also find that the exports of the articles produced were kept up. The exports of cotton yarn and twist in 1883 were valued at 13,511,000*l.*, as compared with 12,865,000*l.* in 1882. The exports of piece goods again were valued at 55,533,000*l.*, as against 55,443,000*l.* in 1882; and other cotton manufactures were valued at 7,404,000*l.*, against 7,489,000*l.* in 1882. In this last case there is a slight decrease; but putting all the articles together, there is a considerable increase in 1883 as

compared with 1882. As regards wool the account is hardly so favourable. It is calculated that the amount of raw material left for home consumption in the United Kingdom in the year was 340,000,000 lbs., as compared with 357,000,000 lbs. in 1882, and with an average of 362,000,000 lbs. in the years 1874 and 1878. Still as compared with recent years, the figure of 340,000,000 lbs. is not unsatisfactory, the consumption in the year 1881 having been estimated at 320,000,000 lbs. only. It is considered in the trade that, as a whole, there has been an increase of activity during the year, and what is to be noted with some satisfaction is that Bradford appears to some extent to have recovered. Messrs. Helmuth Schwartze and Co. state that, 'after resisting what is called the 'fashion' for soft woollen goods for too long a time, the Bradford trade has at last come round to it, with immediate success.' The trade reports also speak of the condition of the woollen trade during the year as having been fairly normal, and the basis of it as both broad and sound.

"The other leading industry to notice is that of agriculture, regarding which the report is that the year 1883 was, on the whole, the best for the farmer for a considerable time previous. The acreage under wheat was a small one, and the return not particularly profitable; but taking the crops all round, the year was a good one, and with good prices for his beef and mutton, the farmer had fair cause to be satisfied. One result of this improved condition of the agricultural districts, we believe, has been a somewhat better home trade than has existed for a few years. Nevertheless, the depression in agriculture has been such of late years that one moderately good harvest has obviously not been sufficient to restore the tone of prosperity, and although the home trade has been somewhat better, it cannot yet be said to be altogether satisfactory. Another good harvest would probably make a great difference for the better, the conditions being now such that a good harvest would tell; but undoubtedly the good harvest which would produce all this change for the better has yet to come. What is disappointing to the agriculturist to some extent is also a good thing for the country, namely, the unprecedentedly low prices of breadstuffs. The farmer at home is not altogether dependent on these prices, his main reliance being on the prices of beef and mutton, and of dairy produce; still they do affect the account somewhat, and all that can be said is that whatever the farmer may lose, the community as a whole is a great gainer, especially now that the import of these breadstuffs tends to exceed largely the home production.

"*Signs of Declension.*

"The general complaint of the wholesale merchant and manufacturer is that production is in excess of the demand, and that markets for produce can only be obtained by the extremely low prices, which are fixed at the expense of the manufacturers and merchants themselves. This is fully confirmed by an inspection of the tables of prices of wholesale commodities which are published weekly in the *Statist*. Running over this list, we find

that the price of pig iron, which was 47*s.* 6½*d.* per ton at the end of January, 1883, had fallen to 43*s.* at the close of the year, the principal fall having occurred in the closing months of the year. Similarly, copper (Chili bars), which was quoted at 65*l.* and 66*l.* per ton at the beginning of the year, had fallen to 58*l.* or a little over at the end of the year. Straits tin, which ranged from nearly 93*l.* to 97*l.* per ton in the beginning of the year, had fallen to 85*l.* at the end of the year. Lead, which was 13*l.* 12*s.* 6*d.* per ton in January, had also fallen to 12*l.* 7*s.* 6*d.* in December; and spelter, from 16*l.* 5*s.* per ton in January, had fallen to 15*l.* 10*s.* in December, the price in this case, however, having been somewhat lower in the middle of the year. In coal alone of the instrumental articles, as we have already hinted, has there been an improvement in price during the year, the comparison being between 17*s.* 6*d.* in January and 18*s.* in December for the best Wallsend, while the price of 19*s.* has been touched during the year. In chemicals, again, we find that, with the exception of bleaching powder, which has almost doubled in price, the chief articles have either remained stationary or have rather declined. Oils have also rather declined, with the exception of petroleum, which is a fraction higher at the end of the year than at the beginning. Linseed oil, which was 20*l.* to 22*l.* at the beginning of the year, is 19*l.* 5*s.* at the end; and rape oil, which was 37*l.* at the beginning of the year, is 33*l.* at the end. Among textiles, cotton remains much the same in price as it was a year ago, both higher and lower prices having been touched in the interval. Flax has risen from 22*l.* 15*s.* to 27*l.* 10*s.*; and jute, from the extremely low price of 12*l.* a year ago, has recovered to what is still the low price of 16*l.* 10*s.* Wool, however, has slightly declined in price. The decline in the price of wheat is very marked, the *Gazette* average price being 39*s.* only at the end of the year, as compared with 40*s.* and 42*s.* at the beginning; while barley and oats are both lower in price. As we have stated, the present price of wheat is, in fact, unprecedentedly low, and we have to go back twenty years before a parallel can be found. Sugar, which was at a low price in the beginning of the year, has still further declined, the price for good refined West India, which was 20*s.* last January, having only been 18*s.* 6*d.* in December, and other descriptions having fallen in proportion.

"Thus, taking prices all round, what we find is that although a low level had been reached at the beginning of 1883, yet the tendency during the year has been to a lower level still. In some cases, such as jute, there has been a remarkable recovery, but that recovery is from an extreme of depression which had never before been known to a level which is still a low one, compared with previous experience. It need hardly be said that such changes in price imply a very serious condition of things for holders of stocks of every kind,—that is, for the merchants and manufacturers. Great losses must undoubtedly have been made, and we do know, in fact, that such losses have been made. The failures in the grain trade at Newcastle and Liverpool, as well as in New York and Chicago, have been especially marked. These failures may,

indeed, be described as one of the characteristic features of the business year of 1883, implying as they do the complete collapse of the rings of capitalists who have endeavoured to maintain the prices of breadstuffs, in the face of the accumulations of surplus harvests all over the world from year to year. It is impossible not to apprehend that what has happened in grain may happen in other trades. However much the losses may have been distributed, and however strong those concerned may have been as a rule, still the fall of price has been such that many weak firms cannot but have suffered greatly, and more failures and troubles will probably be the result.

"Another sign of declension is to be found in the bankers' clearing house returns, which for the last few months of the year show a considerable diminution as compared with the corresponding period of 1882, such diminution marking, as a rule, a falling off in general business. No doubt it is very largely a diminution arising from the falling-off in business on the Stock Exchange settling days, but it is not exclusively so. During the last four months of the year, the decline on the fourths of the month alone—that is, on those days which are more peculiarly marked as commercial settling days—has been about 10 per cent., namely: September, 2,531,000*l.*; October, 1,194,000*l.*; November, 1,593,000*l.*; and December, 2,860,000*l.* So serious a decline in the settlings on the fourths of the month cannot but be noticed in connection with the symptoms of falling prices already referred to, and the general want of tone in business. They seem to herald, as we have said, a diminution in the amount of business itself.

"In certain trades, it appears also to be distinctly evident that a diminution of business is looked for. The reports as to the iron trade in this respect are especially unsatisfactory. Measures for restricting the output are already being adopted, and the number of furnaces in blast is being diminished. The falling off in the amount of shipbuilding at the present time appears especially to be the reason for this change. Although, as we have seen, the tonnage of ships built in 1883 was as large as in the previous year, the new ships coming under construction have not kept up their numbers. Messrs. Bost and Turner, reporting as regards the present state of Glasgow shipbuilding industry, show that there were only 132 vessels in course of construction at the end of 1883, of an aggregate tonnage of 194,000 tons, as compared with 209 vessels at the end of 1882, of an aggregate tonnage of 326,000 tons. Two eminent and experienced shipbuilders, one on the Clyde and one on the East coast, it is stated, estimate the tonnage of ships to be built this year, the one at a half, and the other from five-eighths to three-quarters of that of last year. Possibly these estimates of diminished production may be found to be too gloomy. Price being a material element in such matters, a reduction of price, which seems now to be inevitable, may also lead to more ships being built than would otherwise be built. Still, the present calculations and prospects of the trade must be noticed, and they seem to point rather to a diminution of the amount of business than to an increase.

"The weakness of the Stock Exchange must also be referred to as an element in the general weakness of business. The new issues, as we have seen, were less in 1883 than in 1882, and speculative securities on the Stock Exchange have considerably declined in price. The decline in the speculative securities connected with the United States and North America has been especially marked, and while we write there are still reports of something like collapse on the New York Stock Exchange. All this, while it lasts, tends to affect unfavourably the amount of business done. Unless there are good markets for securities, contractors and others engaged in new enterprises are unable to finance those enterprises, and, consequently, the amount of production generally is diminished. Orders for new railway iron and other material are not given out in the same way as they would be given out if there was a good market on the Stock Exchange for the securities of the new companies by whom these railways are to be made.

"In addition to all these symptoms of decline, we must notice a certain amount of discredit which has been produced by the failures and frauds which have come to light during the past year. The failures have not been in any way excessive in number or amount, taking them altogether, as compared with any previous year; but occurring in certain trades, and affecting leading financial circles in the metropolis and the large towns, they have produced more than a proportionate amount of distrust. The frauds have likewise shaken confidence a good deal. In the spring of last year, great irregularities on the Stock Exchange were discovered; and subsequently there have been two important instances of banks which have sustained heavy losses by the defalcations of managers or secretaries who had been speculating on the Stock Exchange, and had taken the securities of the banks wherewith to realise the money to pay their 'differences.' It is not the mere losses themselves which shake confidence, but the fact that leading people connected with such institutions should be found to be engaged in the game of speculation. The fear is that the haste to be rich may have demoralised more than the one or two people who have actually been found out, and that there may be more unsoundness in the financial world than has yet been suspected. The general effect is to diminish credit, to make people more cautious in lending and in trusting their neighbours than they would otherwise be, and thus, in turn, to diminish the amount of business, and make it more difficult than ever for unsound houses or houses which are merely weak to survive the stress of the present moment.

"*The Prospect of* 1884.

"Proceeding upon these data, it is not difficult to anticipate that the beginning of the year 1884 will not be very satisfactory. It begins, in fact, in the midst of serious languor and depression, and these influences, it is hardly possible to doubt, will continue to operate for some time to come. Changes in such matters are very slow; in fact, the depression has come about so slowly, and the fall of prices has been so steady and prolonged, that it becomes

impossible to anticipate that there will be any sudden recovery very soon. Apparently, business has to go through a more difficult time than it has had to go through for some years, and for the moment we cannot say that there is a sign of change for the better. The most puzzling circumstance of all is the extreme lowness of prices. A year ago, we must admit, we were inclined to judge, from the extreme lowness of prices which then prevailed, that a recovery before long was not unlikely; but, in actual fact, it has turned out that low as prices were, they had not reached the bottom, and a further and serious fall, as we have seen, has taken place. Recovery, however, is, of course, only a question of time. In such circumstances, cheap prices and abundant food must in time produce the usual effects. We cannot doubt but that, according to all past experience, the continuance of the present period of low prices must eventuate in a sharp rebound, such as took place in the year 1879. It is impossible to predict or foresee at what precise date the rebound will come, but, considering the extremely low level to which prices have sunk, we should be rather inclined to anticipate that the rebound will take place in the course of the present year, perhaps before the summer is over. A great deal will depend upon the course of the money market, and in spite of contradictory symptoms, there is every prospect that money will, on the whole, be easy. The most contradictory symptom is that, for a wonder, gold is being exported to Australia; but this export can only be momentary, as it is apparently the result of the great growth of business in Australia during the last few years, which has caused a demand for money in circulation, and has so diminished the cash reserves of the banks that they use the power they possess over the London money market to replenish these reserves. Australia, being a gold-producing country, must soon again have a surplus from its own supplies, and we cannot anticipate, therefore, that the London money market will be permanently affected by any Australian demand for gold. On the other hand, the leading European banks remain as strong, as regards their cash reserves, as they were a year ago; and, what is the most satisfactory feature of all as regards the future, the New York banks have become much stronger in this respect than they have been for several years. The reserve in the New York banks at this moment appears to exceed by about 4,000,000*l.* the minimum of 25 per cent. of their deposits which they are required to hold, and this reserve seems also to be rapidly accumulating. It is only natural, we think, that after the great expansion of the circulation in the United States during the last few years, there should be a reaction like this when trade becomes somewhat depressed. As an effect of this reaction, however, money in New York cannot but be easy; and if money in New York is easy, then the tendency on this side will also be to ease. It seems quite possible, indeed, that gold may be received in Europe from America during the present year, and this will mean a great ease in the money market, until trade again revives and there is a new demand for money connected with the improvement in trade. Still, the improvement in trade is not yet; and the present circumstances, both of trade and of the money market,

undoubtedly command the greatest caution to all concerned. Before the reaction, which seems fairly in prospect, does come, there may be a very difficult time to go through, and all concerned should order their transactions accordingly."

The Index to the Supplement from which the foregoing is taken is appended as usual:—

Introduction.

The Prosperity of the Year—Signs of Declension—The Prospect of 1884.
Imports and Exports of the United Kingdom.

Extracts from Trade Circulars.

(*Illustrated with Diagrams showing the Course of Prices.*)

The Iron Trade—Engineering—Shipbuilding—Freights—Copper—Tin—Tin Plates—Lead—Spelter—Chemicals—Coal—Petroleum—Tallow—Leather—Turpentine. Textiles, &c., Cotton—Wool—Silk—Linen—Jute—Hemp. Food, &c., the Harvest of 1883—Wheat—Rice—Sugar—Tea—Coffee—Cocoa—Wines and Spirits. Wood—Quicksilver—Indigo—Shellac.

Tabular Appendix.

Bank Returns—
Bank of England—Bank of France—Imperial Bank of Germany—Austrian National Bank—Bank of the Netherlands—Associated New York Banks.

Foreign Market Rates of Discount—Exchanges and Bullion.

Clearing House Returns—
London Bankers' Clearing House Returns—Stock Exchange Settling Days.

Savings Banks—Pauperism—Bullion—Allotments of Indian Council Bills in 1883—Indian Bank Rates—Public Revenue—Income Tax—Stock Exchange Securities—Railway Traffic Returns—Railway Dividends—Prices of Wholesale Commodities.

II.—*The Present Position of Spain compared with other European Countries. By* P. A. Delboy. (*Translated from the "Journal de la Société de Statistique de Paris," September,* 1883.)

"In estimating a country's wealth and power, the only true standard to adopt is the state of its economic and industrial conditions, and its degree of development in industries, arts, and manufactures; it is therefore by a review of its statistics that we should be guided in forming our conclusions as to its progress or decline, and assigning to it its proper rank among other civilised nations. By an examination of its economic forces only should we be influenced in drawing our deductions as to its actual status

and importance, and we should be careful not to attach undue importance to its military and naval strength, as the latter can only be considered as a secondary factor, an instrument certainly for the protection of a country's wealth, and in the present age indispensable, yet proving but too frequently the cause of its ruin.

"Perhaps less is known of the economic conditions and resources of Spain than of any other European country, with the exception of Turkey and Russia, and yet the commercial history of this country, which under Charles V, the descendant of the great Catholic kings, was virtually master of Europe, could not fail to be of interest both to the economist and the historian; it would be especially interesting to those who are anxious to see Spain recover her old prestige and take her place once again in the foremost rank of the great European Powers.

"It is matter of history that this country, ruined in a great measure by the disastrous policy of Philip II and his successors of the Austrian dynasty, sank lower and lower until she became only the shadow of her former greatness, and the evil effects of this policy and the fatal consequences of the errors of Isabella, Charles V, and Philip II were only in a slight degree mitigated by the Bourbon 'family compact' policy.

"At the present day, in the midst of European alliances, when we see Spain striving to regain her lost position, and to rank with such powers as Russia, Germany, Austria, England, and France; when we see the rapid strides which have been made of late years by Italy, whose regeneration must naturally excite her envy and admiration; the time would appear to be ripe for a study of the actual position of Spain, and for the consideration of the question of her regeneration and of her progress in all that constitutes economic and intellectual advancement.

"Before commencing an inquiry into the present economic conditions of the country and comparing them with other nations, we must call attention to the fact that the statistics of Spain are far from possessing mathematical precision, in fact they are to a great extent in a state of disorganisation, and it would appear that, in a statistical point of view, attention is only directed to certain natural phenomena, and a limited number of social phenomena, the movement and health of the population, foreign trade, mining industry, ways of communication, public instruction, army, revenue, and expenditure. The returns themselves unfortunately bear upon them the impress of a vice inherent to Spain, and with which the chiefs of the service, General Ibanez, Director of the Geographical Institute, and the Junta Facultative des Mines are well acquainted: this is the system of defrauding the revenue, and with this object so falsifying the returns that they are rendered misleading and untrustworthy.

"The student of Spanish statistics has also another difficulty to contend with, the statistics themselves being several years behindhand; so it will be readily conceded that there were many obstacles in the way of bringing to a successful issue the preparation of a complete and exhaustive statistical account of the economic con-

ditions and resources of Spain, a task undertaken last year for the Minister of Foreign Affairs.

"It was necessary to work from those isolated and fragmentary statistics relating to this country which had appeared from time to time, and to revise and complete them by the aid of criticisms on statistical works and the writings of the economists Fermin Caballero, Fernando Garrido, Meliton Martin, Ruggle, and Ménier, and of the geographers Carreras and Monréal.

"The geographical position of the country is an eminently favourable one; according to the extent of its territory, 195,702 square miles, including the Balearic and Canary Islands, Spain would rank fifth among the European nations. Its area is almost equivalent to that of France, which is about a twentieth part of the whole European area. A reference to the following table will show the areas of the different European countries :—

Countries.	Area. Square Miles.
Russia in Europe	1,887,713
Austria-Hungary	240,262
Germany	208,369
France	204,029
Spain	195,702
Turkey in Europe	139,608
United Kingdom	121,305
Italy	114,386

"It will be seen from the above, that the area of the three last countries is considerably smaller than that of many secondary States. If we include these with the above, Sweden with her 170,928 square miles of territory would take precedence of Turkey, and Norway with an extent of 122,820 square miles would rank before the United Kingdom.

"As regards her frontiers Spain is especially favoured, and enjoys greater advantages in this respect than any European power, if we except perhaps the United Kingdom and Italy, for on the north-east the Pyrenees extend to a distance of 267 miles, and the north-west, south, and east are bounded by the sea to a distance of 1,320 miles, forming an aggregate of 1,587 miles, or about five-sevenths of her entire frontier. It will be seen therefore what an immense advantage Spain has over the majority of her European neighbours in the possession of such an extent of sea board, affording as it does facilities for the supply of food for the consumption of her population, for the extension of her foreign trade, and for her own protection from invasion.

"According to the numbers of her population, Spain would take the seventh place, and rank immediately after Italy, as will be seen in the table given below. It appears from the figures which have been recently published by the Geographical Institute of Madrid of the last census taken in 1877, that the number of the population then existing in Spain amounted to 16,634,345. The following table shows the population of the chief European countries at or about the same period, arranged in the order of numerical importance :—

Countries.	Population.
Russia	76,250,000
Germany	42,727,360
France	36,905,788
Austria-Hungary	37,535,000
United Kingdom	33,805,419
Italy	27,233,000
Spain	16,634,345
Turkey	9,980,000

"The following table shows in detail the distribution of the population in Spain, according to age, sex, civil condition, education, religion, and nationality:—

		Distribution of the Population.	Total Population.
Sex	Males	8,134,331	16,634,345
	Females	8,500,014	
Domicile	Residents	16,181,515	16,634,345
	Travellers	452,830	
Civil condition	Unmarried	9,079,784	16,634,345
	Married	6,450,812	
	Widows and widowers	1,103,133	
	Not stated	616	
Education	Able to read	578,978	16,634,345
	„ and write	4,071,823	
	Unable to read	11,978,168	
	Not stated	5,376	
Religion	Catholics	16,603,959	16,634,345
	Protestants	6,654	
	Jews	402	
	Freethinkers	9,645	
	Others	510	
	Not stated	13,175	
Nationality	Spanish	16,591,791	16,634,345
	French	17,657	
	Portuguese	7,941	
	Italian	3,497	
	English	4,771	
	Other	8,688	

"Spain is a country not distinguished by any great density of the population, but she is not so thinly populated as either Turkey or Russia. Taking a list of European countries arranged in the order of the density of their population, Spain takes the eleventh place:—

Countries.	Population to the Square Mile.	Countries.	Population to the Square Mile.
Belgium	475	Denmark	129
Holland	304	Portugal	116
United Kingdom	290	Spain	85
Italy	238	Turkey	77
Germany	205	Greece	71
France	180	Russia	40
Switzerland	173	Sweden	27
Austria-Hungary	156	Norway	15

"The average annual increase of the population in the various countries will be found in the following table, and also the period in which a doubling of the population may be expected to occur. Here it will be found that Spain takes the fourteenth place:—

Countries.	Annual Increase.	Probable Period of Doubling.	Countries.	Annual Increase.	Probable Period of Doubling.
	Per cnt.	Years.		Per cnt.	Years.
Russia	1·39	50	Holland	1·01	69
Scotland	1·31	53	Belgium	0·83	84
Switzerland	1·30	53½	Bavaria	0·71	98
Norway	1·30	53½	Spain	0·70	99
England	1·29	54	Italy	0·70	118
Prussia	1·13	61½	Ireland	0·59	122
Saxony	1·10	63	Austria	0·57	131
Denmark	1·09	64	Greece	0·53	198
Hungary	1·09	64	France	0·35	
Wurtemburg	1·04	67			

"According to this table the annual percentage increase of the population in Spain is established at 0·70, the same as in Italy. This it will be seen is a considerably higher rate than is to be found in Austria, and exactly double that of France. Taking next the question of births, the proportion to every hundred of the population in Spain is 3·71, or one to every 26·75 inhabitants, while both England and France are represented by a rate considerably lower than this, and as regards still births, Spain, with a proportion of only 0·05 per hundred of the population, compares favourably with France, Italy, Austria, Bavaria, Prussia, Wurtemburg, and Saxony. The proportion of 5·55 illegitimate births to every hundred births is lower than in England, France, Austria, Hungary, and Germany. The annexed comparative statement shows the proportion of total births to every hundred of the population in the principal European countries:—

Countries.	Proportion to every 100 of the Population.	Countries.	Proportion to every 100 of the Population.
Russia	5·07	Spain	3·71
Hungary	4·15	Bavaria	3·70
Wurtemburg	4·08	England	3·56
Saxony	4·01	Holland	3·55
Prussia	3·82	Scotland	3·53
Austria	3·82	France	2·65
Italy	3·76	Ireland	2·62

"The proportion of marriages to every 100 of the population, averages about 0·76, or one to every 131 inhabitants, a higher marriage rate than is to be found in Italy, where it averages 0·64

per cent., but as will be seen in the subjoined table, considerably inferior to that of the majority of the European States :—

Countries.	Proportion to every 100 of the Population.	Countries.	Proportion to every 100 of the Population.
Russia	1·04	Wurtemburg	0·80
Hungary	0·90	France	0·80
Saxony	0·89	Spain	0·76
Bavaria	0·88	Italy	0·64
Prussia	0·85	Scotland	0·61
England	0·85	Ireland	0·53
Austria	0·83		

"The fruitfulness of marriages in Spain is represented by a proportion of 4·58 children to each marriage, and a reference to the table given below will show that this rate is higher than that of Austria, Hungary, England, and France, but lower than we find in Ireland, Italy, and Russia :—

Countries.	Proportion of Births to Marriages.	Countries.	Proportion of Births to Marriages.
Ireland	4·82	Prussia	4·11
Italy	4·79	England	3·95
Russia	4·72	Austria	3·92
Spain	4·58	Saxony	3·85
Scotland	4·51	Bavaria	3·29
Wurtemburg	4·35	France	3·07
Hungary	4·31		

"The following table gives the death-rate to every 100 of the population, and shows that in the question of mortality Spain would compare favourably with Italy, Austria-Hungary, and Russia :—

Countries.	Proportion of Deaths to every 100 of the Population.	Countries.	Proportion of Deaths to every 100 of the Population.
Ireland	1·63	Spain	3·01
Scotland	2·22	Italy	3·06
England	2·27	Hungary	3·06
France	2·30	Wurtemburg	3·16
Prussia	2·69	Austria	3·25
Saxony	2·91	Russia	3·68
Bavaria	2·99		

"If we compare the proportions of deaths of children within the first year of life to every 100 of the population in the various European countries, we arrive at the following results :—

Countries.	Years.	Proportion of Infantile Deaths to every 100 Births.
Scotland	1855–64	11·9
England	'38–54	14·9
	'51–60	15·4
France	'40–59	16·6
	'51–60	17·3
Prussia	'59–64	20·4
Italy	'63–68	22·8
Spain	'61–70	24·5
Hungary	'64–65	24·7
Austria	'56–65	25·1
Saxony	'59–65	26·3
Bavaria	'27–60	30·7
Wurtemburg	'46–56	34·8
	'58–66	35·4

"As regards the average duration of life, Spain, compared with the other European countries, only ranks tenth, but this may, in a great measure, be accounted for by the fact that there is an exceptionally high rate of mortality among children in early infancy, chiefly owing to want of care and proper attention, and a disregard for the doctrines of health. This infant mortality appears to be in the ratio of 24 to every 100 births, while in France it is only 16. If this excessive infantile mortality could be diminished, Spain would probably be able to compare favourably with France, and the probable duration, which is at present about 29 years, might be raised to 39 years, the average duration of life in France. If we exclude the first period of life, we shall find that the average duration in Spain would be about 46 years, the same as in Italy:—

Countries.	Average Duration of Life.	
	From Infancy.	Excluding First Period.
	Yrs. mos.	Yrs. mos.
England	40 –	50 5
France	39 10	51 9
Prussia	36 5	50 4
Italy	31 10	47 –
Spain	29 1	46 9

"Another advantage which would accrue to Spain from a diminution of her infant mortality, would be in the increase in the number of her male population attaining the age of 20; at the present time the proportion being in the ratio of 47·02 to every 100 births, while in Italy it exceeds 53·04, in Prussia it is in the ratio of 58·06, in France 62·09, and in England 64·06.

"We will next look into the question of the producing power of the country, but before commencing an inquiry into this subject, it

would be well to devote some consideration to the facilities at present existing in the interior for easy transportation. On this point a reference to the following table will be useful in throwing light upon the subject, as it gives a comparative statement of the length of railway lines in the different European countries calculated for the period 1878-79 :—

Countries.	Area.	Length of Railways.	Proportion per 100 Square Miles.
	Square miles.	Miles.	Per cnt.
Belgium	11,370	2,304	20·2
United Kingdom	121,305	17,092	14·0
Switzerland	15,976	1,593	9·9
Germany	208,368	18,818	9·0
France	204,028	14,520	7·1
Denmark	14,759	897	6·0
Austria-Hungary	240,262	11,214	4·6
Italy	124,380	5,098	4·1
United States	3,602,800	79,604	2·2
Spain	195,702	3,850	1·9
Portugal	34,595	611	1·7
Sweden	170,928	2,975	1·7
Russia	1,887,713	12,710	0·6
Turkey in Europe	139,608	601	0·4

"From the above we find that although Spain only appears in the tenth place among the civilised nations of the world, yet she still compares very favourably in the matter of her railways with two important States, Russia and Turkey. As regards her other ways of communication, she is considerably below the European level, as will be seen from the following statement:—

Countries.	Total Length. Miles.
France	391,323
United Kingdom	232,254
Italy	60,123
Austria-Hungary	55,470
Germany	46,575
Spain	12,149
Russia	8,114

"Of all the productions of Spain, the most important are undoubtedly those of her mines. She is exceptionally rich in mineral resources, and owes much of the prosperity she enjoys to the facility with which she is enabled to supply the commercial world with metals and minerals. The following table giving the quantities of the production of the chief mineral producing countries is based upon the official statistics for the year 1877 :—

Countries.	Coal.	Iron Ore.	Lead Ore.	Copper Ore.	Zinc Ore.	Manganese Ore.	Phosphate of Lime.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
United Kingdom ..	136,629,924	16,943,194	82,063	74,238	24,772	3,084	70,041
Prussia	33,672,025	2,452,786	134,582	336,947	575,147	5,289	—
France	16,305,827	2,426,278	10,962	6,306	7,846	7,174	—
Belgium	13,928,523	234,227	11,542	—	44,987	—	8,810
Spain	652,362	1,578,150	338,867	1,387,123	70,951	5,703	15,499

Countries.	Iron Pyrites.	Iron.	Lead.	Zinc.	Copper.	Silver.	Salt.	Sulphur, Refined.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
United Kingdom..	44,608	6,707,794	62,324	6,375	4,553	15	2,776,026	—
Prussia	100,919	1,421,667	78,353	94,741	8,661	112	313,471	1,198
France	149,979	1,506,827	8,278	11,881	6,882	38	593,525	—
Belgium	26,207	470,488	7,733	79,312	2,454	—	—	—
Spain	1,385,328	46,919	80,821	3,780	11,221	94	118,876	5,542

"It will be seen from the above, that in the production of lead and copper ores, iron pyrites, lead, copper, and refined sulphur, Spain takes the lead, and ranks second as regards manganese and zinc ores, silver and phosphate of lime. In proportion to her population, Spain may justly be considered the most important mineral country in Europe, both as regards the extent of her resources and the annual value of her productions. As an agricultural country she would take the fifth place among the chief European nations, as a reference to the following statement giving the proportion of cultivated land to the total area of the principal European countries will show :—

Countries.	Proportion per Cent. of Cultivated Lands.
Germany	69·0
Belgium	55·2
France	53·5
Italy	38·0
Spain	37·5
Switzerland	35·7
Austria	33·7
England	24·7
Russia	13·9

"A comparison has been made of the average yield per acre under wheat cultivation in different countries, with the following results :—

Countries.	Average Produce per Acre.	Countries.	Average Produce per Acre.
	Bshls.		Bshls.
United Kingdom	27·19	Norway	12·25
Holland	25·38	Austria-Hungary	12·14
Belgium	20·24	Sweden	11·98
Denmark	19·33	Greece	11·69
France	18·04	Spain	11·13
Roumania and Servia...	16·70	Russia in Europe.....	10·86
Germany	16·49	Turkey in Europe	10·02
Switzerland	15·54	Portugal	8·10
Italy	15·13		

"It may be observed here that in Spain the average produce per acre exceeds that of Russia and Turkey, and it would be only fair to assume that if it enjoyed equal advantages as regards the latest agricultural improvements as Italy, Austria, and Germany, the yield even of these countries would be surpassed. If we compare the total wheat production of the different grain producing countries we arrive at the following results, and it will be seen that Spain ranks third on the list:—

Countries.	Produce. Qrs.
France	34,000,000
Russia	26,500,000
Spain	22,100,000
Germany	13,600,000
Austria-Hungary	13,200,000
United Kingdom	13,000,000
Italy	12,800,000

"Spain's inferiority in the matter of her average yield of wheat may in a great measure be accounted for by the fact that little attention is paid to a proper system of manuring, the average annual expenditure incurred in manuring an acre of land as compared with other countries, excepting Russia and Portugal, being infinitesimal, amounting only, as will be seen in the following comparative statement, to about 2*d.* per acre:—

Countries.	Average Annual Cost of Manuring.	Countries.	Average Annual Cost of Manuring.
	Per acre. *s.* *d.*		Per acre. *s.* *d.*
England	48 7	Austria-Hungary	3 10
Scotland	24 3	Italy	3 3
Belgium	16 2	Germany	1 7
France	10 4	Ireland	– 8
Holland	9 9	Spain	– 2
Switzerland	9 9	Russia	– 2
Denmark	6 6	Portugal	– 2
Sweden and Norway	4 4		

"Spain's importance as a wine producing country will be seen in the following statement. Here she takes the fourth place, with a total yield of 440 millions of gallons, France coming first with a production of 1,082 millions:—

Countries.	Production. Gallons.
France	1,082,400,000
Italy	596,992,000
Austria-Hungary	572,000,000
Spain	440,000,000
Portugal	132,000,000
Germany	88,000,000
Turkey in Europe	66,000,000

"It has been found almost impossible to obtain any reliable data on which to base an estimate of the number of live stock in Spain, and we are therefore unable to submit any statement of the

relative importance of the different European countries on this point, but it is evident from the very incomplete information which we have been able to gain, that she ranks much below the majority of the more important European countries, and her position may approximately be given as seventh in a list comprising Russia, Germany, Austria, France, United Kingdom, Holland, Belgium, Italy, and Portugal.

"As regards the volume of her foreign trade she would also rank seventh, as we find in the annexed table. Here it will be observed that she is considerably behind the United Kingdom, Sweden and Norway, Germany, France, and Italy:—

Countries.	Imports.	Exports.	Total.
	£	£	£
United Kingdom	373,939,000	281,613,000	655,551,000
Germany	183,770,000	121,640,000	305,410,000
France	167,048,000	127,188,000	294,236,000
Russia	73,085,000	68,593,000	141,678,000
Austria-Hungary	57,060,000	44,080,000	101,140,000
Italy	48,600,000	42,000,000	90,600,000
Spain	21,647,000	19,195,000	40,842,000

"Comparing the aggregate tonnage of the merchant navies of the different countries, Spain again ranks seventh in the order of importance:—

Countries.	Vessels.	Tonnage.
	No.	Tons.
United Kingdom	39,291	8,462,000
Sweden	8,248	1,526,689
Norway	7,651	1,319,727
Germany	4,804	1,129,129
France	15,419	1,068,131
Italy	10,907	1,031,880
Spain	2,402	537,444
Austria-Hungary	8,226	330,672
Russia	3,908	382,000
Greece	5,437	262,000
Turkey in Europe	230	181,000
Denmark	3,286	257,419
Portugal	575	123,525

"The movement of shipping at the various ports of the kingdom, comparing it with France, shows the following tonnage of vessels entering and clearing with cargoes, distinguishing national and foreign ships, in the year 1878:—

Countries.	Entered.			Cleared.			Total.		
	National.	Foreign.	Total.	National.	Foreign.	Total.	National.	Foreign.	Total.
France..	2,949,236	6,953,859	9,903,095	2,608,384	3,577,187	6,185,571	5,557,620	10,531,046	16,088,666
Spain....	641,261	1,301,569	1,942,830	1,907,717	2,911,182	4,818,899	2,548,978	4,212,751	7,760,729

"To arrive at an approximate idea of the importance of Spain as regards her colonial possessions, we cannot do better than show in the following tabular statement the extent of her dependencies, and the population inhabiting them, comparing them with similar returns relating to the colonial possessions of the chief European powers. Spain comes third here in the order of numerical importance as regards her colonial population :—

Countries.	Colonial Population.	Superficial Area.
	No.	Square miles.
United Kingdom ..	305,448,187	7,766,116
Holland	26,718,131	—
Spain	8,055,000	166,306
France	6,440,000	236.539
Portugal	3,306,247	604,547

"We now come to another question, the importance of which cannot be overestimated, the education of the people, and we will now consider how the system is organised in Spain, and to what extent the education of the masses has advanced. On this point we have derived considerable assistance from the education statistics published by the Director General of Public Instruction in 1870, and we are enabled to judge to what extent the law of the 17th July, 1857, had influenced the degree of instruction that was attained at the date of the publication of these returns. The effect of this law was to render instruction compulsory in the case of children between the ages of 6 and 9, and it provided for free instruction to be given to those who were unable to defray the necessary scholastic expenses; it also decreed that each commune with a population of 500 should maintain an elementary school for boys and another for girls; each commune containing 2,000 inhabitants was to provide two schools for each sex; and in the case of communes with a population exceeding this number, two extra schools were to be provided for each additional 2,000 inhabitants; and finally there was to be a high school in every commune containing 10,000 inhabitants. These statistics, to which we have called attention above, appeared in the year 1870, but in a very crude and incomplete condition, and it was only in 1878 that more detailed information was given on the general subject of Spanish education, in a brochure published in connection with the Paris Exhibition. The author of this brochure, one of the heads of the University of Madrid, devoted considerable attention in his work to the correction of the many erroneous impressions which had hitherto been formed, chiefly through the misrepresentations of Manier, on the subject of the system of Spanish education generally. The detailed and exhaustive information which he gave was in a great measure identical with that contained in the *Atlas Ménier*, published about the same time as his work appeared. From a review of these two publications, it appears that as regards the number of children attending elementary schools, Spain would rank ninth among the European countries, and if we consider only the seven great powers, it ranks

third after Germany and France, but before Great Britain, Austria-Hungary, Italy, Russia, and Turkey. At first it would appear that the level of Great Britain and Austria-Hungary is unduly depressed, but it must be borne in mind that with the former Ireland is included, and with the latter Hungary, both of these countries having a much smaller proportion of children attending elementary schools than Spain. The following table will show the relative positions of the different countries in the year 1878, as regards the education of the people :—

Countries.	Area.	Population.	Schools.	Scholars.	Budget Expenditure.
	Sq. miles.	No.	No.	No.	£
Switzerland	15,976	2,759,854	7,800	420,000	348,327
Germany	208,368	42,727,000	60,000	6,010,150	5,600,000
Sweden	170,927	4,429,713	8,770	615,135	425,680
Denmark	14,759	1,903,000	2,909	259,505	213,200
France	204,028	36,905,788	71,280	4,725,000	2,400,000
Belgium	11,370	5,403,000	8,246	669,192	992,257
Norway	122,820	1,807,555	6,459	215,391	175,552
Holland	20,727	3,805,456	3,734	444,707	612,325
Spain	195,702	16.634,345	29,038	1,633,288	1,040,000
United Kingdom	121,395	33,805,419	58,075	3,000,000	2,600,000
Austria-Hungary	240,262	37,535,000	29,267	3,044,996	2,760,000
Italy	114,386	27,233,000	47,417	1,931,617	1,080,000
Greece	19,339	1,357,894	1,373	93,000	116,000
Portugal	34,595	4,047,110	4,513	198,131	81,000
Russia	1,887,716	76,250,000	32,000	1,130,000	1,000,000
Turkey	139,608	—	—	—	—

Countries.	Number of Scholars to every 100 Inhabitants.	Number of Inhabitants.		Number of Scholars to each School.	Average Annual Expenditure.		
		Per School.	Per Scholar.		Per School.	Per Scholar.	Per Inhabitant.
					£ *s.* *d.*	*s.* *d.*	*s.* *d.*
Switzerland	15·22	394	6·57	54	50 16 7	2 6	
Germany	14·06	712	7·02	100	93 18 7	2 7	
Sweden	13·88	505	7·20	70	48 13 10	1 11	
Denmark	13·63	654	7·33	89	73 16 6	2 3	
France	12·82	518	7·81	66	34 10 1	1 3	
Belgium	12·38	655	8·07	81	120 29 7	3 8	
Norway	11·91	280	8·40	33	27 16 3	1 11	
Holland	11·54	1,035	8·70	119	164 27 6	3 2	
Spain	9·72	573	10·17	56	36 13 7	1 3	
United Kingdom	8·87	582	11·26	52	45 17 3	1 6	
Austria-Hungary	8·15	1,276	12·25	104	94 18 1	1 6	
Italy	7·09	574	14·09	41	23 —	9 3	
Greece	6·38	1,062	15·66	67	58 17 2	1 1	
Portugal	4·89	896	20·42	44	18 8 2	— 4	
Russia	1·48	2,383	67·47	35	31 17 8	— 3	
Turkey	—	—	—	—	— —	—	

"It will be seen from the annexed table how nearly the foregoing statements, which were taken partly from the education

statistics, and partly from the brochure to which we called attention above, agree with the figures published in the *Atlas Ménier*:—

Countries.	Proportion of Inhabitants able to Read and Write only to every 100 of the Population.	Proportion of Children attending Elementary Schools to every 100 of the Population.		Proportion of Inhabitants unable to Read and Write to every 100 of the Population.
	According to Ménier.	According to the Author of the Brochure.	According to Ménier.	According to Ménier.
Switzerland	81·50	15·22	15·50	3·00
Germany	71·00	14·06	15·00	14·00
Sweden	83·25	13·88	13·75	3·00
Denmark	72·50	13·63	15·00	12·50
France	45·49	12·82	12·80	41·71
Belgium	36·00	12·38	11·20	52·80
Norway	82·50	11·91	12·50	5·00
Holland	67·00	11·54	13·00	20·00
Spain	16·00	9·72	9·00	75·00
United Kingdom	46·89	8·87	11·11	42·00
Austria	29·00	8·15	9·00	62·00
Hungary	16·00		7·50	76·50
Italy	23·50	6·91	6·50	70·00
Greece	—	6·38	5·50	80·00
Portugal	20·00	4·89	2·50	77·50
Russia	9·00	1·66	2·00	89·00
Turkey	7·00	—	1·00	92·00

"In reviewing the statistics of education in Spain, we cannot fail to be impressed with the rapid progress which education has made since the passing of the law of the 17th July, 1857. This is clearly shown in the following statement:—

	1850.	1865.	1870.	1878.
Number of schools	13,334	22,271	22,711	29,038
„ scholars...	652,163	not known	1,200,740	1,633,288

"This short sketch of the territory, population, and economic conditions of Spain, will we think be sufficient to show us that hope may reasonably be entertained that in time to come, and probably at no very distant day, Spain may again resume her place in the councils of the world, and the rank she once held among the great powers of Europe, and we may confidently predict that she has a future in prospect full of the brightest hopes and expectations."

III.—*The Rationale of Exchange.*

By F. Y. Edgeworth, Esq., M.A.

The phenomenon which I attempt to analyse is not the property of a market which Professor Jevons* has formulated, the unity of price, but a still more elementary property, the fact of price; the circumstance that one thing is exchanged for another *at so much per piece*, that the total quantities exchanged are just as much as it is the interest of both parties to give and take *at a certain rate*. For example: at the rate of 9*d.* an hour an artisan might be willing to give just six hours work a day; at the rate of a guinea an hour a professor might be willing to give just two lectures a day. Under a *régime* of perfect competition it is improbable that these workers would do twice as much, or half as much, work for the same multiple of pay. It is impossible that they should accept now one now another of the indefinite number of contracts, which are constituted by substituting in the last statement instead of *two* or a *half* any intermediate factor. But the latter arrangements would be quite possible if we could abstract the differentiæ of a market, under a *régime* of compact between combinations, or other socialistic corporations;† supposing that artisan and professor would rather accept those terms than give up their work altogether (seek a new occupation or country perhaps, or be supported by charity).

The origin of this property appears to be twofold. There is first, and probably foremost, mere convenience, the difficulty of otherwise conducting complicated commercial transactions. The obvious advantage of ready reckoning is supplemented by a more subtle action of self-interest. It is deducible *à priori* that, if there be two (or *mutatis mutandis* more) groups of dealers, trafficking in two commodities, each of one group free to make any bargain with each one or any number of the other group, the final‡ settlement towards which the play of competition tends, is precisely that which has been above stated. We do not here with Professor Jevons start from the fact of price and make a short step to the unity of price; but starting higher up from the abstract definition of the economic man we reason down to the fact as well as the unity of price.

Now the *rationale* of this deduction, the reason why the complex play of competition tends to a simple uniform result—what is arbitrary§ and indeterminate in contract between individuals becoming extinct in the jostle of competition—is to be sought in a principle which pervades all mathematics,‖ the principle of limit, or law of great numbers as it might perhaps be called. In virtue of this principle, throughout the most varied fields of physics it continually occurs that from whatever initial circumstances we

* *Theory of Political Economy*, p. 99.

† See the writer's essay on *Mathematical Psychics*.

‡ Ibid.

§ Ibid., p. 25, top.

‖ See De Morgan, Calculus of Functions, *Encyclop. Metrop.*, Art. 41.

start, and it may be often added by whatever steps we move, we arrive ultimately at the same position. Nor is the principle confined to physics; it finds a conspicuous illustration in what is called, *par excellence*, the law of great numbers, the law of error, which is at least as applicable to social as physical phenomena. As the law of error has been sometimes improperly identified with the law of competition, it will not be irrelevant to observe that the points of union between them are derivation from the mathematical principle of limit and application to complexities of human life. For the rest they are not in *pari materiâ*. The law of error is derivable from a differential* equation, which is familiar to the physicist; the law may be compared to the theorem in the science of heat,† that if a given quantity of heat be distributed according to *any* law of distribution over a given small portion of an infinitely long thin bar; upon diffusion, the final (or rather the penultimate) distribution of heat throughout the bar is *the same*, whatever the initial distribution; expressed by the same function as the law of error. The analysis and analogues of the law of competition are less familiar. The field of competition may be compared to a fanciful system consisting of two groups of particles in a plane, each particle tending to its own position of maximum (kinetic, minimum potential) energy, and so peculiarly constrained, that the sums of the‡ resolved paths of one set of particles, are respectively equal to the sums of the resolved paths of the other set; and that, while no particle of one set can move without one or more of the other set, no work can be done *against* any particle. Equilibrium, which is indeterminate in the case of a finite number of particles, becomes determinate in the limit. Such is the far-fetched derivation of our second cause.

How far the first cause has been in primitive times, or is at present, supplemented by the second cause it would be difficult and it is unimportant to determine. The only corollary which may possibly be of practical importance is that where the indefinite plurality essential to a market fails, as in the *régime* of federation which some of our socialists aim at, there may fail not only, as is now generally§ discerned (not perhaps without the instrumentality of mathematics), the determinateness of price, but also what is less conceivable, the fact of price.‖

It remains to inquire whether the connection between mere convenience and the more refined calculation of expediency is

* $\frac{du}{dt} = k \frac{d_2 u}{dx^2}$. See *Philosophical Magazine*, October, 1883, article on the *Law of Error*, and observe that the right hand member of the fundamental equation (1) there given reduces to the right hand member of equation (2) given above, when the limits of the elementary errors are *small* (mean powers above square neglectible); the essential condition of the generation of the received law of error. (See *Philosophical Magazine*, February, 1884, p. 138.)

† Fourier, *Théorie de Chaleur*, Art. 377.

‡ Say $Sx = S\xi$ and $Sy = S\eta$.

§ Marshall's *Economics of Industry*, p. 200. Sidgwick's *Principles of Political Economy*, p. 355.

‖ *Cp.* Walras's *Elements*, p. 352.

accidental. No, I submit; the connection is that laws of limit are apt to be simple, and simplicity is apt to be convenient. May we push the inquiry one step further, and explain the connection between the mathematical simplicity of nature, and human convenience as a result of evolution?

IV.—*Record of Family Faculties.*

At the Ordinary Meeting of the Society held on the 15th January, the Chairman, Sir Rawson W. Rawson, K.C.M.G., C.B., read the following letter from Mr. Francis Galton:—

"Sir,—I beg to present herewith to the Statistical Society a copy of my 'Record of Family Faculties.' It will be observed that I offer prizes to the amount of 500*l.* to those who shall furnish me with the best *extracts* from their own family records, as described in the book and in the fly-leaf prefixed to it, and for the statistical purposes there named.

"I should be greatly obliged if the Council of the Statistical Society saw their way to aid this attempt, by giving publicity to it and their implied approval.

"Yours faithfully,

"Francis Galton.

"*The Secretary of the Statistical Society.*"

He said there could be no doubt that the object was a most interesting one, and the results might prove very valuable. The Council was most desirous of forwarding Mr. Galton's object, and proposed to notice it in the next number of the *Journal*. It hoped that the attention which his communication would receive from the members might lead to an important increase of knowledge with regard to anthropometry, and the physical conditions of English society.

V.—*The Fires in London during the Year* 1883, *and the Metropolitan Fire Brigade.*

The following particulars are taken from Captain Shaw's Report for 1883, to the Metropolitan Board of Works, in continuation of similar notices for previous years:—

"The number of calls for fires, or supposed fires, received during the year has been 2,630. Of these 337 were false alarms, 149 proved to be only chimney alarms, and 2,144 were calls for fires, of which 184 resulted in serious damage, and 1,960 in slight damage.

"These figures refer only to the regular calls for fires, or supposed fires, involving the turning out of firemen, fire engines, fire escapes, horses, and coachmen; they do not include trifling damages by fires which were not sufficiently important to require the attendance of firemen; neither do they include the ordinary calls for chimneys on fire, which are separately accounted for further on.

"The fires of 1883, compared with those of 1882, show an increase of 218; and compared with the average of the last ten years, an increase of 446.

"The following table gives the result both in actual numbers and percentages:—

Year.	Number of Fires.			Percentages.		
	Serious.	Slight.	Total.	Serious.	Slight.	Total.
1866.....	326	1,012	1,338	25	75	100
'67.....	245	1,152	1,397	18	82	100
'68.....	235	1,433	1,668	14	86	100
'69.....	199	1,373	1,572	13	87	100
'70.....	276	1,670	1,946	14	86	100
'71.....	207	1,635	1,842	11	89	100
'72.....	120	1,374	1,494	8	92	100
'73.....	166	1,382	1,548	11	89	100
'74.....	154	1,419	1,573	10	90	100
'75.....	163	1,366	1,529	11	89	100
'76.....	166	1,466	1,632	11	89	100
'77.....	159	1,374	1,533	10	90	100
'78.....	170	1,489	1,659	10	90	100
'79.....	159	1,559	1,718	9	91	100
'80.....	162	1,709	1,871	9	91	100
'81.....	167	1,824	1,991	8	92	100
'82.....	164	1,762	1,926	9	91	100
'83.....	184	1,960	2,144	9	91	100

"The number of fires in the metropolis in which life has been seriously endangered during the year 1883 has been 112; and the number of these in which life has been lost has been 29.

"The number of persons seriously endangered by fire has been 176, of whom 137 were saved, and 39 lost their lives. Of the 39 lost, 13 were taken out alive, but died afterwards in hospitals or elsewhere, and 26 were suffocated or burned to death.

* * * * *

"The number of calls for chimneys has been 4,383. Of these 1,501 proved to be false alarms, and 2,882 were for chimneys on fire. In these cases there was no attendance of engines, but only of firemen with handpumps.

"The number of journeys made by the fire engines of the 55 land stations has been 29,850, and the total distance run has been 67,850 miles.

"The quantity of water used for extinguishing fires in the metropolis during the year has been 28,998,078 gallons—in round numbers nearly 29 million gallons, or about 130,000 tons. Of this quantity, about 67,000 tons, or rather more than one-half of the whole, was taken from the river, canals, and docks, and the remainder from the street pipes.

"During the year there have been 12 cases of short supply of water, 28 of late attendance of turncocks, and 4 of no attendance, making altogether 44 cases in which the water arrangements were unsatisfactory: but, notwithstanding this, I am bound to say that all the water companies have used the greatest efforts in their

power to serve us, and that our best thanks are due to them for their exertions.

"I have also to express my obligations to the Metropolitan and City Police, both of which bodies work with us and for us with a cordiality and zeal beyond all praise. We are deeply indebted to these admirable forces for their unceasing co-operation, to which we attribute a large portion of any success we have attained.

"The strength of the brigade is as follows:—

55 land fire engine stations.
12 street stations.
127 fire escape stations.
4 floating „
2 large land steam fire engines.
40 small „
87 six-inch manual fire engines.
37 under six-inch manual fire engines.
147 fire escapes and long scaling ladders.
3 floating steam fire engines.
2 steam tugs.
5 barges.
61 hose carts.
14 vans.
12 waggons for street stations.
2 trollies.
2 ladder trucks.
588 firemen, including chief officer, second officer, superintendents, and all ranks.

"During the year there has been a large development of our telegraphic system, and we have now the following lines of communication in complete working order:—

45 telegraphs between fire stations.
18 telephones „
1 direct fire alarm „
23 alarm circuits round fire stations with 151 call points.
4 telegraphs to police stations.
13 telephones „
16 telegraphs to public and other buildings.
13 telephones „
12 direct fire alarms „

"The number of firemen employed on the several watches kept up throughout the metropolis is at present 108 by day and 253 by night, making a total of 361 in every twenty-four hours; the remaining are available for general work at fires.

"Our list of wounds and other injuries for 1883 is unusually large; but considering the risks to which all ranks have been exposed, and the way in which the work has been done, it cannot be thought excessive. This list is generally heavy."

* * * * *

The following particulars (*a*, *b*, *c*) are obtained from the tables appended to the report:—

(*a*) The fires classified according to occupations, arranged in the order of frequency of occurrence; to which are added, for the pur-

pose of comparison, the corresponding figures for the three previous years :—

Number.	Occupations.	Number of Fires.			
		1883.	1882.	1881.	1880.
1	Private houses	440	423	427	342
2	Lodgings	256	235	236	247
3	Victuallers	65	58	68	53
4	Oil and colourmen	48	30	32	40
5	Coffee houses	46	31	33	31
6	Grocers	42	44	33	39
7	Drapers	40	21	32	35
8	Builders	35	27	32	34
9	Greengrocers and fruiterers	34	26	23	16
10	Confectioners and pastrycooks	33	19	9	15
11	Under repairs and building	32	22	25	24
12	Bakers	30	23	16	21
13	Boot and shoe makers	30	36	30	49
14	Chandlers	30	18	9	23
15	Cabinet makers	28	30	38	27
16	Tailors, clothiers, and outfitters	27	28	26	33
17	Warehouses	27	13	12	12
18	Milliners and dressmakers	22	12	7	9
19	Tobacconists	22	22	19	17
20	Booksellers, binders and stationers	21	26	24	23
21	Beershop keepers	19	8	19	15
22	Furniture makers and dealers	17	16	19	14
23	Chemists, and laboratories for chemical purposes	16	13	8	8
24	Corn dealers	16	10	16	13
25	Offices	16	16	24	16
26	Engineers and machinists	15	12	14	11
27	Railways	15	14	9	10
28	Carpenters and workers in wood (not cabinet makers)	14	15	8	15
29	Dairymen	14	5	2	4
30	Printers	14	22	18	15
31	Butchers	13	7	7	7
32	Dyers	13	8	3	2
33	Fishmongers	13	8	8	8
34	Hotels, including club houses	13	13	23	18
35	Laundries	13	11	10	10
36	Looking glass and picture frame makers	13	8	1	9
37	Refreshment rooms	13	19	18	22
38	Unoccupied	13	22	31	14
39	China, glass, and earthenware dealers	12	2	11	9
40	Provision merchants	12	7	8	11
41	Stables	12	21	13	12
42	Upholsterers	12	6	7	9
43	Contractors	11	4	16	10
44	Marine store dealers	11	5	6	5
45	Tinmen, braziers, and smiths	11	6	7	4
46	Farming stock	10	8	20	31
47	Waggons on the road	10	—	4	4
48	Wardrobe dealers	10	13	5	3
		1,679	—	—	—
	Remainder, varying from 9 to 1	465	—	—	—
		2,144	—	—	—

(*b*) The fires classified under the causes to which they have been assigned, and arranged in the order of frequency of occurrence:—

Causes.	Number of Fires.
1. Unknown	575
2. Lamps (not gas) and lights (thrown down)	396
3. Gas (in various ways)	208
4. Sparks from fires, &c.	166
5. Defective, or improperly set—flues, ovens, furnaces, boilers, stoves, &c.	141
6. Candles	115
7. Overheating of—flues, ovens, furnaces, boilers, stoves, &c.	109
8. Children playing with fire, matches, &c.	93
9. Hot ashes	61
10. Foul flues	53
11. Airing linen and drying stoves	42
12. Boiling over, or upsetting of fat, pitch, &c.	37
13. Lucifer matches	27
14. Lime slaking by rain and otherwise	20
15. Smoking tobacco	19
16. Spontaneous ignition	18
17. Spirits, or vapour of spirits, in contact with flame	16
18. Doubtful	10
19. Friction of machinery	6
20. Fire, clothes coming in contact with	5
21. Hot coke	4
22. Incendiarism	4
Miscellaneous, varying from 3 to 1	19
Total	2,144

(*c*) The following table giving the totals of the fires for each day of the week for the last ten years, shows on the average that the largest number of fires occur on Saturday and the smallest number on Monday. The annual average number of fires for the last ten years is 1,757:—

Years.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Total.
1874....	222	228	228	195	240	231	229	1,573
'75....	200	203	231	227	236	209	223	1,529
'76....	260	218	226	235	242	221	230	1,632
'77....	192	218	212	224	243	216	228	1,533
'78....	260	191	271	234	214	236	253	1,659
'79....	235	212	231	257	264	251	268	1,718
'80....	288	262	253	259	254	266	289	1,871
'81....	270	267	315	288	279	253	319	1,991
'82....	285	246	296	267	281	274	277	1,926
'83....	297	334	309	318	269	295	322	2,144
Total...	2,509	2,379	2,572	2,504	2,522	2,452	2,638	17,576

VI.—*German Literature of* 1882 *and* 1883.

The following is taken from the *Publishers' Circular* of the 15th February, 1884 :—

"Systematic view of the literary productions of the German bookselling trade in 1882 and 1883, extracted from the *Börsenblatt:*—

	1882.	1883.
1. Collections or sets of works—literary history, bibliography	365	381
2. Divinity	1,373	1,504
3. Law, politics, statistics, trade	1,355	1,301
4. Medicine, veterinary	847	922
5. Natural history, chemistry, pharmacy	799	832
6. Philosophy	158	142
7*a*. Education, German school-books, physical education	1,990	1,691
7*b*. Juvenile books	404	386
8. The classics and oriental languages, antiquities, mythology	559	609
9. Modern languages, old German	487	501
10. History, biography, memoirs, letters	783	795
11. Geography and travel	370	290
12. Mathematics and astronomy	190	221
13. War, hippology	345	366
14. Mercantile science, technology	675	671
15. Engineering, mechanics, mining, nautical	365	482
16. Sport and forestry	99	98
17. Domestic economy, agriculture, gardening	388	337
18. Belles lettres, novels, poems, drama, &c.	1,260	1,207
19. Fine arts—painting, music, &c.; shorthand	529	615
20. Popular literature, almanacks	634	724
21. Freemasonry	28	28
22. Miscellaneous	416	370
23. Maps	355	329
Total	14,774	14,802

VII.—*English Literature in* 1883.

The following particulars are taken from the *Publishers' Circular* of the 31st December, 1883, in continuation of a series of similar extracts for previous years :—

"According to annual custom, we present to our readers in our last number for the old year an analytical table of the books published during the last twelve months, from which it will be seen that the new issues of 1883 exceeded those of 1882 by 754 volumes. This may in itself be accepted as a satisfactory indication that there has been a progressive movement in trade circles during the year, and that a demand for actual novelty in literature is making itself felt. If we turn to the relative number of new books in the various departments of literature represented in our table, we find that theology, under which are included sermons and biblical works, numbered 704, or more than one-sixth of the total of 4,732 books; juvenile literature, including tales, stands next with 741,

also more than one-sixth; educational books, including classical texts and philological works, stand next with 556, more than one-eighth; history and biography account for 414, or one-eleventh; books on the arts and sciences and illustrated works stand next with 354, one-thirteenth; and novels, tales, and other forms of fiction claim 349, an almost similar proportion to the whole; year-books and annual volumes of serials number 315, one-fifteenth; belles-lettres, essays, and monographs number 256, one-eighteenth; records of voyages, travels, and geographical research are represented by 210, one in every twenty-one; and then follow in order miscellaneous issues, including pamphlets other than sermons, 199; books on political and social economy, trade and commerce, 187; medical books and surgical treatises, 163; and works on law, jurisprudence, &c., 139. As compared with 1882, the largest actual increase is in belles-lettres, essays, &c., which rose from 92 to 256; next stands educational literature, with 556 new volumes against 435 in the previous twelve months, a rise of 121; next in order there is a rise of 108 in theological books and sermons, which stood at 596 in 1882 and 704 in 1883; then there is a growth of 90 in books on the arts and sciences and illustrated works, which numbered 354 in 1883, as compared with 264 in 1882; of 87 in law and jurisprudence, showing a rise from 52 to 139, and history and biography from 361 to 414. The increase in the issues of novels and general fiction is limited to 43 volumes. The only branch of literature which shows a falling off in the number of issues is in poetry and the drama, which stood at 158 in 1882, and fell to 145 in 1883. The general total of new editions shows an increase of 267, the figures being 1,146 in 1882, and 1,413 in 1883. Of this increase nearly one-half, 105, comes under the head of novels.

"The analytical table is divided into fourteen classes; also new books and new editions:—

Divisions.	1882.		1883.	
	New Books.	New Editions.	New Books.	New Editions.
Theology, sermons, biblical, &c.	596	193	704	208
Educational, classical, and philological	435	90	556	135
Juvenile works and tales	727	260	741	198
Novels, tales, and other fiction	306	124	349	229
Law, jurisprudence, &c.	52	23	139	84
Political and social economy, trade and commerce	145	44	187	38
Arts, sciences, and illustrated works	264	80	354	137
Voyages, travels, geographical research	204	40	210	75
History, biography, &c.	361	91	414	122
Poetry and the drama	158	23	145	14
Year books and serials in volumes	255	14	315	12
Medicine, surgery, &c.	119	58	163	90
Belles lettres, essays, monographs, &c.	92	14	256	48
Miscellaneous, including pamphlets, not sermons	264	92	199	23
	3,978	1,146	4,732	1,413
	5,124		6,145	

Analytical Table of Books Published in 1883.

Subjects.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total of Books on each Subject for the Year.	
Theology, sermons, biblical, &c.	*34	56	27	78	52	50	51	36	41	46	100	133	704	
	† 7	25	13	10	15	26	17	13	14	9	24	35	208	
													—	912
Educational, classical, and philological	*16	60	43	56	49	37	43	47	37	47	54	67	556	
	† 8	11	11	4	15	17	9	12	7	8	20	13	135	
													—	691
Juvenile works and tales	*20	30	38	30	45	33	30	21	48	120	184	142	741	
	† 2	21	17	14	10	16	15	9	19	15	36	24	198	
													—	939
Novels, tales, and other fiction	* 9	28	20	27	36	40	28	22	15	16	49	59	349	
	† 3	20	13	23	52	19	14	21	10	10	14	30	229	
													—	578
Law, jurisprudence, &c.	* 3	10	5	17	10	17	17	1	9	10	13	27	139	
	† 3	10	1	18	8	5	6	3	4	7	6	13	84	
													—	223
Political and social economy, trade and commerce	* 1	13	14	9	17	15	22	14	22	13	17	30	187	
	† 1	2	2	3	4	2	8	2	3	3	4	4	38	
													—	225
Arts, science, and illustrated works	*13	32	15	26	41	58	32	12	20	33	28	44	354	
	† 4	11	6	8	10	17	19	13	7	13	13	16	137	
													—	491
Voyages, travels, and geographical research	* 7	11	7	11	24	30	15	16	16	13	21	39	210	
	†—	3	2	5	6	17	10	9	5	3	7	8	75	
													—	285
History, biography, &c.	*17	31	13	26	39	40	30	15	20	35	73	75	414	
	† 3	8	6	9	8	11	10	12	7	7	10	31	122	
													—	536
Poetry and the drama	* 1	13	11	10	14	18	1	8	9	10	21	29	145	
	†—	1	—	—	—	2	2	1	—	—	2	6	14	
													—	159
Year books and serials in volumes	*26	41	18	13	14	15	13	14	13	23	40	85	315	
	† 1	1	1	—	3	—	—	2	—	1	1	2	12	
													—	327
Medicine, surgery, &c.	* 7	7	11	16	12	12	17	8	15	9	21	28	163	
	† 6	7	1	13	10	12	5	7	2	7	8	12	90	
													—	253
Belles lettres, essays, monographs, &c.	* 5	6	5	15	25	21	22	14	16	23	48	56	256	
	†—	4	2	3	7	3	4	4	2	5	8	6	48	
													—	304
Miscellaneous, including pamphlets, not sermons	* 9	27	7	16	24	17	17	16	15	14	24	13	199	
	† 1	4	1	2	4	2	1	1	2	3	1	1	23	
													—	222
	207	493	310	462	554	552	458	353	378	503	847	1028		
														6,145

* New books. † New editions.

VIII.—"*The Progress of the Working Classes in the Last Half Century.*"

In consequence of the great demand for copies of the President's last Inaugural Address, the Council authorised its separate issue in advance of the December number of the *Journal*, in which it appeared in due course. The Council also gave its Author permission to reprint the Address for issue in a more popular form, and this has been done through Messrs. Bell and Co., with the following introductory note attached.

NOTE.

The accompanying Paper constituted my Inaugural Address as President of the Statistical Society, Session 1883-84, and was read at the Meeting of the Society on 20th November last. It is now reprinted from the pages of the Society's *Journal*, with the omission of one or two preliminary remarks on matters unconnected with the main subject of the address, and with one or two verbal amendments which this omission has made necessary.

I have to thank the Council of the Society for their permission to reprint the Address in the present cheap form.

The suggestion to publish the Address in this form has been made to me by several friends, and I have especially to thank Mr. Gladstone for the following letter, which he has kindly permitted me to publish:—

"Hawarden Castle, Chester,
"28*th December*, 1883.

"Dear Mr. Giffen,

"I have read with great pleasure your masterly paper. It is probably in form and in substance the best answer to George; and I hope it may be practicable to give it a wide circulation.

"Might I ask for another couple of copies.

"Believe me,
"Faithfully yours,
"W. E. GLADSTONE."

In complying with these suggestions, I desire to add, on my own account, that I hope the facts stated in the Paper will be of use apart from their bearing on a particular controversy. The question as to whether the masses of the community are improving materially and morally is of general scientific interest; and any fair contribution of facts towards answering the question should be helpful to the student in more ways than one. My chief regret has been that I have not had more time to devote to the subject, which would repay a more ample investigation.

R. GIFFEN.

17*th January*, 1884.

IX.—*Additions to the Library.*

Additions to the Library during the Quarter ended 31st March, 1884.

Donations.	By whom Presented.
Argentine Republic—	
Annuaire Statistique de la Province de Buénos-Ayres, publié sous la direction du Dr. Emile R. Coni. 2e année, 1882. (Contents): Territoire, Climat, Population, Administration, Instruction Publique, Justice, Prisons, Police, Culte, Bienfaisance, Salubrité Publique, Agriculture et Élevage, Commerce et Navigation, Industrie, Salaires, Voies de Communication, Transports, Postes et Télégraphes, Revenus, Eaux Publiques, Drainage, Service Militaire, Terres, Edifices, Appendice. lxxi + 463 pp., maps, la. 8vo. Buénos-Ayres, 1883	Dr. E. R. Coni, Statistical Bureau
Departamento Nacional de Higiene. Boletin Mensual. Tomo I, Núm. 17, 1883	The Department
Buenos Aires—	
Bulletin Mensuel de Démographie de la Ville de—. 2e Année. Nos. 12, 15, 1883, and Résumé for 1883	The Statistical Bureau
Datos mensuales de la Estadistica Comercial. Año 1883. No. 16. Año 1884. No. 17. 8vo....	Argentine Legation, London
Austria and Hungary—	
Austria—	
Nachrichten über Industrie, Handel, und Verkehr, aus dem Statistischen Departement im k. k. Handels-Ministerium. Band 26. 4 Heft. La. 8vo. 1884	Dr. Brachelli
Waaren-Ausfuhr aus dem allgemeinen Oesterreichisch-Ungarischen Zollgebiete im Jahre 1882. IV Band. 3 Heft. La. 4to. 1883	The Imperial Central Statistical Commission
Waaren-Durchfuhr durch das allgemeine Oesterreichisch-Ungarische Zollgebeit im Jahre 1882. IV Band. 4 Heft. La. 4to. 1883	
Hungary—	
Statistisches Jahrbuch für Ungarn. Eilfter Jahrgang, 1881. Hefte VII, XII. Zwölfter Jahrgang, 1882. Hefte III, VI, IX. La. 8vo. 1883	The Royal Hungarian Statistical Bureau
Magyarország Arúforgalma, Ausztriával és más Országokkal. Fuzet, 8—12, la. 4to. Budapest, 1883. (Monthly Trade Statistics)	
Prague. Bulletin hebdomadaire de la ville de Prague et des communes-faubourgs. (Current numbers)	The Statistical Bureau, Prague
Belgium. Ville de Bruxelles. Bulletin Hebdomadaire de Statistique, Démographique et Médicale. (Current numbers)	Dr. E. Janssens, Brussels
Bulgaria. Résultats Généraux du Recensement de la Population du $\frac{1}{13}$ Janvier, 1881. 4to. Sofia, 1884	The Statistical Bureau
China—	
Imperial Maritime Customs. 4to. Shanghai.	
I. Statistical Series. No. 2. Customs Gazette. July—September, 1883	Sir Robert Hart, K.C.M.G.
III. Miscellaneous Series. No. 6. List of Chinese Lighthouses, Light-vessels, Buoys and Beacons for 1884. 12th issue	

Donations—Contd.

Donations.	By whom Presented.
Denmark. Nationalökonomisk Tidsskrift, 1 Hefte. 1884 Kjöbenhavn	The Danish Political Economy Society
Egypt. Le Commerce Extérieur de l'Egypte pendant l'année 1882. Diagram, 4to. 1883	The Director-General of Customs, Egypt
France—	
Bureau des Longitudes. Annuaires pour les ans 1869, 1870, 1872, 1875. Avec des Notices scientifiques. 18mo.	Henry B. De Jouy, Esq.
Exposé de la Situation de l'Empire présenté au Sénat et au Corps Législatif. Novembre, 1869. Sm. folio	
Navigation Intérieure. Cours d'Eau Administrés par l'État. Relevé du Tonnage des Marchandises par Classe et par cours d'eau . . . pendant l'année 1857. La. 4to.	
Rapport sur les Opérations des Sociétés de Secours Mutuels pendant les années 1876 et 1880. (2 vols.) La. 4to.	
Bulletin de Statistique et de Legislation comparée, Decembre, 1883—Janvier, 1884	M. A. De Foville
Ministère de l'Agriculture. Bulletin. 3e année. No. 1. Plates, la. 8vo. Paris, 1884	The Minister of Agriculture
Ministère des Travaux Publics. Bulletin du—. Novembre, Decembre, 1883—Janvier, 1884	The Ministry of Public Works
Ville de Paris. Budget de l'Exercice, 1883. La. 4to.	H. B. De Jouy, Esq.
Ville de Reims. Bulletin Mensuel du Bureau Municipal d'Hygiène. Decembre, 1883—Janvier, Fevrier, 1884	The Bureau of Hygiène
L'Economiste Français. (Current weekly numbers.) Paris	The Editor
Révue Bibliographique Universelle, Paris :—	
Partie Littéraire. Dec., 1883. Jan.—Mar., 1884....	”
” Téchnique. Dec., 1883. Jan.—Mar. 1884....	
Révue Géographique Internationale. 8e année, 1883, Nos. 97 et 98 ; 9e année, 1884, Nos. 99 et 100	”
Société de Statistique de Paris. Journal de la—. Jan.—Mar., 1884	The Society
(*Tables des Matières.*)	
Janvier. Rapport fait au nom de la commission des prix sur les résultats du concours de 1883. Le Mouvement de la Population en France pendant l'année 1882. Statistique de la prestation en nature sur les chemins vicinaux. Le Divorce et la Séparation de corps dans les différents pays de l'Europe. Le Mouvement de l'émigration française et étrangère par les ports français (1878 à 1881). Variété. Le Mouvement des actions de la Banque de France	
Février. Le Divorce et la Séparation de corps dans les différents États de l'Europe. Le Cours des fonds publics français depuis 1878. Les Sociétés de secours mutuels en 1881. Variétés : Le Crédit et les Associations ouvrières. Les Accidents de chemins de fer en 1881	

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Mars. Rapport sur la situation financière de la Société. Les Résultats statistiques des dénombrements les plus récents (France, Prusse, Autriche, Italie et Suisse). Le Cours des valeurs mobilières depuis 1878 (2e article). Variétés: Statistique médicale de la France. La Production des vins et des cidres. Les Contenances moyennes par cote foncière dans chaque département. La Marine marchande en 1883. Le Service des postes dans le Royaume Uni. La Superficie des mers	The Society
Germany—	
Monatshefte zur Statistik des Deutschen Reichs, Nov. und Dec., 1883. Jan., 1884. La. 4to.	
Statistik des Deutschen Reichs. Band LVII. 4to. 1882-83. Die Volkszählung im Deutschen Reiche am 1 December, 1880. Erster Theil, Bevölkerungs-Zahl und Dichtigkeit, Wohnorte, Gebäude, Haushaltungen. Zweiter Theil. Alter und Geschlecht, Familienstand Geburtsort und Religionsbekenntniss der Bevölkerung	The Imperial Statistical Bureau, Berlin
Veröffentlichungen des Kaiserlich Deutschen Gesundheitsamtes. No. 52. VII Jahrgang, fol. 1883	
Berlin—	
Die Berliner Volkszählung von 1880. Erstes Heft. Die Bevölkerungs- und Wohnungs-Aufnahme vom 1 December, 1880, in der Stadt Berlin. 160 pp., diagram, map, 4to. 1883.....	The Statistical Bureau of Berlin
Veroffentlichungen des Statistischen Amts der Stadt—Eheschliessungen, Geburten, Sterbefalle, und Witterung. (Current weekly numbers)	
Prussia—	
Preussische Statistik. La 4to. 1884.—LXXIV. Die Bewegung der Bevölkerung, mit Einschluss der Wanderungen im preussischen Staate während des Jahres 1882	The Royal Statistical Bureau of Prussia
Zeitschrift des Koniglich Preussischen Statistischen Bureaus. 23er Jahrgang, 1883. Hefte III and IV, diagrams, fol.	
Saxony. Zeitschrift des K. Sächsischen Statistischen Bureau's XXIX, Jahrgang, 1883. Hefte I und II. 4to.	The Royal Statistical Bureau of Saxony
Guatemala. Anales Estadisticos de la Republica de Guatemala. Año de 1882, Tomo 1. Sm. fol. 1883	The Government of Guatemala.
Italy—	
Annali del Credito e della Previdenza. Anno 1883. Atti della Commissione Consultiva sugli Istituti di Previdenza e sul lavoro. 8vo.	
Annali dell' Industria e del Commercio, 1884—	
Disposizioni sul lavoro dei Fanciulli.	The Director General of Statistics, Rome
Sull' Industria dei Guanti in Napoli e sui provvedimenti che la Riguardano.	
Annali di Statistica. Serie 3a, vol. 8. Statistica della stampa periodica al 1° gennaio, 1883; Delle forme frenopatiche nelle classi agiate; Note di statistica antropometrica italiana. Diagrams, 8vo. 1883	

Donations—Contd.

Donations.	By whom Presented.
Italy—*Contd.*	
Atti della Giunta per la Inchiesta Agraria e sulle Condizioni della Classe Agricola. Vol. x, Fasc. 1 e 2. La. 4to. 1883	The Director-General of Statistics, Rome
Bollettino Settimanale dei Prezzi, di alcuni dei principali Prodotti Agrari e del Pane. (Current weekly numbers)	
Bollettino di Notizie Commerciali. (Current bi-weekly numbers)	
Bollettino di Notizie sul Credito e la Previdenza. Anno 1, Nos. 6 e 8; Anno II, Nos. 1 e 2	
Bollettino Mensile delle Situazioni dei Conti degli Instituti d'Emissione. Anno XIV; Nos. 10 e 12.	
Bollettino Bimestrale del Risparmio. Anno VIII; No. 5. 1883	
Bollettino Consolare. Vol. xix, fasc. 10–12. Vol. xx, fasc. 1	
Diciottesima Relazione sul Servizio Postale in Italia, 1882. Sm. fol. 1883	
Relazione sulle condizioni Sanitarie dei Corpi della R. Marina durante il quadriennio 1879-82. La. 8vo. 1883	
Relazione Statistica sui Telegrafi del Regno d'Italia, nell' anno 1882. Diagrams, sm. fol. 1883	
Statistica dei Debiti Comunali e Provinciali per Mutui al 31 dicembre, 1880. La. 8vo. 1883	
Statistica del Commercio Speciale di Importazione e di Esportazione Oct.—Dec., 1883. Gennaio, 1884	
Netherlands—	
Statistiek van den Loop der Bevolking van Nederland over 1881. La. 8vo. 1883. (Movement of Population)	The Netherlands Legation, London
Statistiek der Geboorten en der Sterfte naar den Leeftijd en de oorzaken van den dood in Nederland. Oct.—Dec., 1883	The Statistical Society of the Netherlands
Roumania. Tablou General indicând Comerciul Romaniei cu Statele Straine in Anul 1882. Diagrams, map, folio. 1883	The Central Statistical Bureau, Bucharest
Russia. Réglement définitif du Budget de l'Empire pour l'Exercice, 1882. Rapport présenté au Conseil de l'Empire par S. Excellence M. le Contrôleur de l'Empire. 49 pp., 8vo. St. Pétersbourg, 1883	M. A. Vessélovsky
Spain—	
Boletin Mensual de Estadistica Demográfico-Sanitaria de la Peninsula é islas adyacentes. Maps, 4to. Años 1879-82 (3 vols.) Num. 48—53, Jan.—June, 1883	Exmo Señor D. José Magáz y Jayme
Memorias Comerciales y Suplemento. (Current bi-weekly numbers)	The Board of Customs, &c.
Madrid. Boletin de la Sociedad Géográfica de—. Tomo ix, Núm. 1 y 2; x, Núm. 1; xv, Núm. 4—6, 1883; xvi, Núm. 1 y 2, 1884	The Society

Donations—Contd.

Donations.	By whom Presented.
Sweden and Norway—	
Norway—	
Annuaire Statistique de la Norvége. Quatrième année, 1883. La. 8vo.	The Central Statistical Bureau of Norway
Meddelélser fra det statistiske Centralbureau, No. 1—4, for 1883. (Journal of the Central Statistical Bureau)	
Norges Officielle Statistik. Ny Række. La. 8vo. 1883—	
A. 2. Fattigstatistik for 1878 og 1879. (Public Assistance)	
B. 1. Tabeller vedkommende Norges Kriminalstatistik for Aaret 1880. (Criminal Statistics)	
C. 1. Tabeller vedkommende Folkemængdens Bevægelse i Aarene 1876-80. II. B. Sammendrag af Tabellerne for Aarene 1876-80. V. Tabeller for Aaret 1880. (Movement of Population)	
C. 8. De offentlige Jernbaner. Beretning om de norske Jernbaners Drift i Terminen 1ste Juli, 1881, til 30te Juni, 1882. (Railways)	
C. 10. Statistik over Norges kommunale Finantser i Aarene 1878, 1879, og 1880. II. Tabeller for Aaret 1879. (Communal Finances)	
C. 16. Uddrag af Aarsberetninger fra de forenede Rigers. Konsuler for Aaret 1882. 4 Hefter. (Consular Reports)	
D. 2. Tabeller vedkommende Norges Sparebanker i Aarene 1881 og 1882. (Savings Banks)	
F. 1. Den norske Statstelegrafs Statistik for 1882. (Telegraphs)	
F. 2. Tabeller vedkommende Norges Postvæsen for Aaret 1882. (Postal Statistics)	
Sweden—	
Aldre Bidrag till Sveriges Officiela Statistik. I. Sverige 1571 af Hans Forssell. Andra Häftet. La. 8vo. 1883	The Central Statistical Bureau, Stockholm
Bidrag till Sveriges Officiela Statistik. 4to. 1883.—	
A. Befolkningsstatistik. Ny följd XXII: 2. för år 1880. (Census)	
B. Rättsväsendet. Chefens för Kongl. Justitie-Departementet underdåniga Embetsberättelse år 1882. (Justice)	
L. Statens Jernvägstrafik 21. a. för år 1882. Diagram. (Railways)	
M. Postverket. Generalpoststyrelsens Berättelse om Postverkets Förvaltning under År 1881, 1882. (Post Office)	
N. Jordbruk och Boskapsskötsel Sammandrag af Kungl. Maj:ts Befallningshafvandes årsväxtberättelser för år 1883. (Agriculture)	

Donations—Contd.

Donations.	By whom Presented.
SWEDEN—*Contd.*	
Bidrag till Sveriges Officiela Statistik—Contd.	
S. Allmänna Arbeten 11. Styrelsens för Allmänna Väg-och Vattenbyggnader Underdåniga Berättelse för året 1882. (Railways, Canals, &c.)	
U. Kommunernas Fattigvård och Finanser. Statistiskä Centralbyråns underdåniga Berättelse för år 1881. (Communal Finance and Assistance)	The Central Statistical Bureau, Stockholm
X. Aflönings-och Pensionsstatistik. Statistiska Centralbyråns underdåniga berättelse af gifven år 1883. (Salaries and Pensions)	
Statistisk Tidskrift. La. 8vo. 1883—	
N:o. 2. Sparbankerna i Sverige år 1881. (Savings Banks)	
N:o. 3. Dödligheten månads-och årstidsvis i Sverige, 1861-80	
STOCKHOLM. Congrès Pénitentiaire International de Stockholm. Août, 1878. Compte-rendus des Séances. Tome premier. xxxvi + 655 + iv + 177 pp. La. 8vo. 1879	Dr. F. T. Berg
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Tenth Census of the United States, 1880. 4to. Washington, 1883—	
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REGISTRATION OF THE UNITED KINGDOM.

No. I.—ENGLAND AND WALES.

MARRIAGES—To 30th September, 1883.
BIRTHS and DEATHS—To 31st December, 1883.

A.—*Serial Table of* Marriages, Births, *and* Deaths, *returned in the Years* **1883-77**, *and in the* Quarters *of those Years.*

Calendar Years, **1883-77**:—*Numbers.*

Years.....	'83.	'82.	'81.	'80.	'79.	'78.	'77.
Marriages No.	—	204,405	197,290	191,965	182,082	190,054	194,352
Births..... ,,	889,815	889,018	883,642	881,643	880,389	891,906	888,200
Deaths .... ,,	522,662	516,654	491,935	528,624	526,255	539,872	500,496

Quarters *of each Calendar Year*, **1883-77.**

(I.) Marriages:—*Numbers.*

Qrs. ended last day of	'83.	'82.	'81.	'80.	'79.	'78.	'77.
March..... No.	43,915	39,820	38,043	41,238	35,956	39,137	39,704
June ..... ,,	47,883	52,905	50,370	45,844	46,623	48,584	49,065
September ,,	52,192	51,207	48,607	47,703	45,121	46,628	47,743
December ,,	—	60,473	60,270	57,180	54,382	55,705	57,840

(II.) Births:—*Numbers.*

Qrs. ended last day of	'83.	'82.	'81.	'80.	'79.	'78.	'77.
March..... No.	232,086	223,616	225,451	221,699	226,056	220,792	230,241
June ..... ,,	228,703	227,424	225,303	232,920	220,966	228,620	223,249
September ,,	214,144	220,381	215,966	219,023	218,668	222,604	213,195
December ,,	214,882	217,597	216,922	208,001	214,699	219,890	221,515

(III.) Deaths:—*Numbers.*

Qrs. ended last day of	'83.	'82.	'81.	'80.	'79.	'78.	'77.
March..... No.	146,856	140,121	138,312	145,787	155,916	139,373	134,931
June ..... ,,	133,783	125,107	120,811	125,366	132,003	129,096	131,244
September ,,	113,118	118,235	110,204	131,241	103,919	129,664	109,467
December ,,	128,905	133,191	122,608	126,230	134,417	141,739	124,854

Annual Rates of Marriages, Births, *and* Deaths, *per* 1,000 Persons Living *in the Years* **1883-77**, *and in the* Quarters *of those Years.*

Calendar Years, **1883-77**:—*General Ratios.*

Years.....	'83.	Mean '73-82.	'82.	'81.	'80.	'79.	'78.	'77.
Estmtd. Popln. of England *in thousands* in middle of each Year....	26,771,	—	26,414,	26,062,	25,714,	25,371,	25,033,	24,700,
Persons Married	—	15·9	15·5	15·1	14·9	14·4	15·2	15·7
Births	33·2	35·1	33·7	33·9	34·2	34·7	35·6	36·0
Deaths.....	19·5	20·8	19·6	18·9	20·5	20·7	21·6	20·3

Quarters *of each Calendar Year*, **1883-77.**

(I.) Persons Married:—*Ratio per* 1,000.

Qrs. ended last day of	'83.	Mean '73-82	'82.	'81.	'80.	'79.	'78.	'77.
March	13·3	13·1	12·2	11·8	12·9	11·5	12·7	13·0
June.....	14·4	16·1	15·9	15·5	14·3	14·7	15·6	15·9
September	15·5	15·5	15·4	14·8	14·7	14·1	14·8	15·3
December	—	18·7	18·2	18·4	17·6	17·0	17·7	18·6

(II.) Births:—*Ratio per* 1,000.

Qrs. ended last day of	'83.	Mean '73-82.	'82.	'81.	'80.	'79.	'78.	'77.
March	35·2	36·2	34·3	35·1	34·6	36·1	35·8	37·8
June.....	34·3	35·9	34·5	34·7	36·3	34·9	36·6	36·3
September	31·7	34·3	33·1	32·9	33·8	34·2	35·3	34·2
December	31·8	34·2	32·7	33·0	32·1	33·6	34·9	35·6

(III.) Deaths:—*Ratio per* 1,000.

Qrs. ended last day of	'83.	Mean '73-82.	'82.	'81.	'80.	'79.	'78.	'77.
March	22·3	23·2	21·5	21·5	22·7	24·9	22·6	22·2
June.....	20·1	20·4	18·8	18·6	19·6	20·9	20·7	21·3
September	16·8	18·9	17·8	16·8	20·3	16·3	20·6	17·6
December	19·1	20·9	20·0	18·7	19·5	21·0	22·5	20·1

B.—*Comparative Table of* Consols, Provisions, Coal, *and* Pauperism *in each* Quarter *of* **1881-82-83.**

Quarters ending	Average Prices of: Consols (for Money) per 100*l.* Stock.	Discount charged by the Bank of England.	Wheat per Quarter in England and Wales.	Meat per Pound at the Metropolitan Meat Market (by the Carcase), with the *Mean* Prices. Beef.	Mutton.	Coal (Seaborne) in the London Market per Ton.	Pauperism. Quarterly Average of the Number of Paupers Relieved on the *Last Day* of each Week. In-door.	Out-door.
1881	£	£	*s. d.*	*d. d. d.*	*d. d. d.*	*s. d.*		
Mar. 31	99⅛	3·19	42 3	4¾—7¼ 6	5—9 7	16 –	191,578	591,071
June 30	101⅝	2·65	44 6	4¼—7 5⅝	5—9¼ 7⅛	15 1	173,074	558,941
Sept. 30	100¼	3·14	48 10	4½—7¼ 5⅞	5¼—9 7⅛	15 8	164,567	538,057
Dec. 31	99⅝	4·93	45 10	4½—7½ 6	5—8⅞ 7	17 2	178,058	539,517
1882								
Mar. 31	100⅜	4·93	45 5	4½—7½ 6	5½—9¼ 7½	15 –	187,202	560,513
June 30	101⅞	3·00	46 9	5—8 6½	5½—9½ 7½	14 9	170,546	542,134
Sept. 30	99⅞	3·67	47 3	5—8¼ 6⅝	5⅜—9⅝ 7½	16 5	165,280	529,921
Dec. 31	101⅝	5·00	40 8	4⅝—8⅛ 6⅜	5⅜—9¾ 7⅝	17 2	180,228	534,387
1883								
Mar. 31	102	3·84	41 3	5⅛—8⅛ 6⅝	5⅞—10⅛ 8	16 6	189,391	558,064
June 30	102⅛	3·57	42 8	5—8 6½	5¾—9½ 7⅝	16 9	172,858	537,495
Sept. 30	100⅛	3·88	42 5	5—8⅜ 6¾	5¾—10 7⅞	17 –	165,263	519,260
Dec. 31	101½	3·00	40 –	4¾—8 6⅜	5⅜—9½ 7½	17 9	178,715	518,070

C.—*Special Average Death-Rate Table:*—Annual Rate *of* Mortality *per* 1,000 *in* Town *and* Country Districts *of* England *in each Quarter of the Years* **1883-81.**

	Area in Statute Acres.	Population Enumerated. 1881.	Quarters ending	Annual Rate of Mortality per 1,000 in each Quarter of the Years: 1883.	Mean '73-82.	1882.	1881.
In 134 Districts, and 57 Sub-districts, comprising the *Chief Towns*	3,184,419	15,444,808	March ..	23·2	24·7	23·2	22·9
			June	20·8	21·4	20·2	19·4
			Sept.	18·3	20·9	19·5	18·5
			Dec.	20·7	22·9	21·7	20·5
			Year	20·8	22·5	21·2	20·3
			Year ...	17·7	18·6	17·3	16·8
In the remaining Districts and Sub-districts of England and Wales, comprising chiefly *Small Towns* and *Country Parishes*	34,134,802	10,523,478	March ..	20·8	21·3	19·1	19·6
			June ...	19·0	19·0	17·2	17·4
			Sept.	14·5	16·1	15·2	14·2
			Dec.	16·6	18·0	17·5	15·9

Note.—In calculating these rates of mortality corrections are made for inequalities in the numbers of days in the different quarters of the year. The annual rates are the means of the four quarterly rates.

D.—*Special Town Table:*—Population; Birth-Rate *and* Death-Rate *in each Quarter of* 1883, *in* Twenty-Eight *Large Towns.*

Cities and Boroughs.	Estimated Population in the Middle of the Year 1883.	Annual Rate to 1,000 Living during the Thirteen Weeks ending							
		31st March. (1st Quarter.)		30th June. (2nd Quarter.)		29th September. (3rd Quarter.)		29th December. (4th Quarter.)	
		Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
Twenty-eight towns	8,620,975	36·7	23·8	35·2	21·5	33·6	19·9	33·2	21·2
London	3,955,814	36·2	22·1	34·2	20·5	32·8	18·8	32·4	20·3
Brighton	111,262	31·2	19·6	30·8	18·0	27·8	19·4	26·9	19·9
Portsmouth	131,478	35·1	20·0	35·3	18·8	34·3	18·9	36·6	16·8
Norwich	89,612	36·5	23·2	35·1	19·7	30·9	17·6	33·9	18·1
Plymouth	74,977	35·1	24·9	30·2	20·8	30·7	18·8	30·1	18·9
Bristol	212,779	33·6	20·2	33·1	17·4	30·7	15·3	31·6	18·7
Wolverhampton	77,557	38·2	25·8	37·7	21·2	35·8	18·6	33·4	19·5
Birmingham	414,846	38·6	23·9	36·9	20·9	33·4	20·5	33·5	20·1
Leicester	129,483	39·7	21·2	38·9	19·1	35·0	18·8	34·7	18·6
Nottingham	199,349	40·9	23·7	41·3	20·7	38·2	19·6	37·6	21·1
Derby	85,574	40·2	18·4	36·0	19·6	35·1	15·6	32·5	18·8
Birkenhead	88,700	36·4	22·4	36·0	19·5	34·8	16·3	34·4	21·1
Liverpool	566,753	38·2	30·9	36·3	26·6	33·4	24·8	33·0	24·4
Bolton	107,862	35·5	25·6	36·1	19·4	33·9	19·6	33·0	22·1
Manchester	339,252	37·3	30·2	36·9	27·5	34·9	24·9	34·7	27·9
Salford	190,465	37·8	23·0	36·5	20·7	34·5	21·2	34·0	24·8
Oldham	119,071	36·2	25·4	35·6	23·4	34·2	18·2	35·0	21·0
Blackburn	108,460	40·6	29·2	40·5	25·3	37·9	19·5	37·4	24·0
Preston	98,564	41·6	27·8	38·6	23·7	37·2	24·8	35·4	25·7
Huddersfield	84,701	29·3	21·5	27·7	23·6	29·0	19·1	32·2	21·0
Halifax	75,591	32·1	24·6	30·2	20·7	27·8	15·0	26·1	20·0
Bradford	204,807	31·4	21·5	30·3	17·8	28·2	16·4	26·9	17·7
Leeds	321,611	35·7	25·1	35·3	21·9	35·3	21·2	32·5	24·9
Sheffield	295,497	37·7	25·8	36·5	23·7	36·4	21·8	36·2	20·5
Hull	176,296	37·3	27·5	38·7	25·7	35·9	18·0	35·1	20·1
Sunderland	121,117	42·0	27·9	42·3	22·0	42·7	27·6	40·5	20·6
Newcastle	149,464	38·8	24·7	36·0	23·3	35·2	27·1	37·0	26·7
Cardiff	90,033	39·9	21·0	38·4	20·3	40·5	17·3	38·1	22·3
Edinburgh	235,946	28·6	21·1	30·6	19·6	27·8	17·0	29·0	19·1
Glasgow	515,589	39·1	31·7	40·9	32·0	37·2	24·3	36·5	24·7
Dublin	349,685	31·0	35·2	30·7	30·7	27·2	22·7	25·3	28·0

E.—*Divisional Table:*—MARRIAGES *in the Year ending 30th September; and* BIRTHS *and* DEATHS *in the Year ending 31st December,* **1883,** *as Registered Quarterly.*

1	2	3	4	5	6	7
DIVISIONS. (England and Wales.)	AREA* in Statute Acres.	Enumerated POPULATION, 1881.	MARRIAGES in Quarters ending 31st December, 1882.	31st March, 1883.	30th June, 1883.	30th September, 1883.
ENGLD. & WALES....*Totals*	37,319,221	No. 25,974,439	No. 60,359	No. 43,915	No. 47,883	No. 52,192
I. London	75,362	3,816,483	10,038	7,686	7,860	9,802
II. South-Eastern	3,994,431	2,487,076	5,254	3,512	4,026	4,421
III. South Midland	3,201,325	1,596,259	3,230	1,949	2,327	2,677
IV. Eastern	3,211,441	1,343,524	3,351	1,751	1,887	2,065
V. South-Western	4,981,170	1,859,198	3,729	2,867	3,138	3,198
VI. West Midland	3,945,460	3,029,319	7,297	4,869	5,237	5,887
VII. North Midland	3,535,445	1,637,865	3,844	2,814	3,283	3,106
VIII. North-Western	1,998,914	4,108,184	9,507	7,693	8,364	9,156
IX. Yorkshire	3,702,384	2,894,759	6,808	5,132	5,166	5,735
X. Northern	3,547,947	1,624,213	3,702	3,138	3,587	3,272
XI. Monmthsh. & Wales	5,125,342	1,577,559	3,599	2,504	3,008	2,873

8	9	10	11	12	13	14	15	16
DIVISIONS. (England and Wales.)	BIRTHS in each Quarter of 1883 ending 31st March.	30th June.	30th September.	31st December.	DEATHS in each Quarter of 1883 ending 31st March.	30th June.	30th September.	31st December.
ENGLD. & WALES....*Totals*	No. 232,086	No. 228,703	No. 214,144	No. 214,882	No. 146,856	No. 133,783	No. 113,118	No. 128,905
I. London	35,655	33,737	32,309	31,955	21,814	20,187	18,565	20,012
II. South-Eastern	20,714	19,651	18,948	19,431	11,998	11,114	9,169	10,211
III. South Midland	13,705	13,744	12,548	12,809	8,320	7,587	6,231	6,932
IV. Eastern	11,770	11,677	10,649	11,385	7,104	6,597	5,439	5,863
V. South-Western	14,643	13,839	12,837	13,140	9,992	8,975	6,856	7,987
VI. West Midland	27,407	26,984	24,736	25,023	17,044	14,920	12,292	14,933
VII. North Midland	15,214	14,972	13,887	14,075	8,808	8,149	6,757	7,701
VIII. North-Western	38,519	38,235	36,009	35,888	26,149	23,410	20,388	24,011
IX. Yorkshire	25,301	25,589	24,383	23,899	16,796	15,476	12,896	14,785
X. Northern	15,861	16,142	15,163	15,019	9,402	8,638	8,012	8,478
XI. Monmthsh. & Wales	13,297	14,133	12,675	12,258	9,429	8,730	6,513	7,992

* These are revised figures, and will be found to differ somewhat from those first published.

F.—*General Meteorological Table,*

[Abstracted from the particulars supplied to the

1883. Months.	Temperature of Air. Mean.	Air. Diff. from Average of 112 Years.	Air. Diff. from Average of 42 Years.	Evaporation. Mean.	Evaporation. Diff. from Average of 42 Years.	Dew Point. Mean.	Dew Point. Diff. from Average of 42 Years.	Air—Daily Range. Mean.	Air—Daily Range. Diff. from Average of 42 Years.	Water of the Thames	Elastic Force of Vapour. Mean.	Elastic Force of Vapour. Diff. from Average of 42 Years.	Weight of Vapour in a Cubic Foot of Air. Mean.	Weight of Vapour in a Cubic Foot of Air. Diff. from Average of 42 Years.
	°	°	°	°	°	°	°	°	°		In.	In.	Grs.	Gr.
Jan.....	41·2	+4·7	+2·8	39·6	+2·8	37·6	+2·9	9·1	−0·5	—	·225	+·026	2·6	+0·2
Feb.....	42·6	+3·9	+3·1	40·9	+3·2	38·8	+3·5	11·3	+0·2	—	·236	+·026	2·7	+0·4
Mar. ...	36·1	−5·0	−5·7	33·2	−6·2	29·2	−7·0	14·8	+0·1	—	·161	−·056	1·9	−0·7
Means..	40·0	+1·2	+0·1	37·9	−0·1	35·2	−0·2	11·7	−0·1	—	·207	+·001	2·4	0·0
April ...	46·8	+0·7	−0·3	43·3	−0·7	39·4	−1·1	20·2	+1·8	—	·249	−·004	2·8	−0·1
May.....	53·1	+0·6	+0·4	49·2	+0·4	45·3	+0·3	20·2	−0·3	—	·303	+·005	3·4	−0·1
June ...	59·0	+0·8	+0·1	54·9	+0·4	51·3	+0·7	21·9	+1·0	—	·378	+·008	4·3	+0·2
Means...	53·0	+0·7	+0·1	49·1	0·0	45·3	0·0	20·8	+0·8	—	·310	+·003	3·5	0·0
July.....	59·9	−1·8	−2·3	56·2	−1·5	53·0	−1·0	19·3	−1·7	—	·402	−·016	4·5	−0·3
Aug. ...	61·9	+1·0	+0·6	57·7	+0·2	54·1	+0·1	21·2	+1·6	—	·419	·000	4·6	−0·1
Sept. ...	56·8	+0·3	−0·3	54·5	+0·5	52·4	+1·3	16·7	−1·6	—	·394	+·015	4·4	0·0
Means...	59·5	−0·2	−0·7	56·1	−0·3	53·2	+0·1	19·1	−0·6	—	·405	·000	4·5	−0·1
Oct.....	50·4	+0·9	+0·4	48·4	+0·5	46·2	+0·3	12·6	−2·0	—	·313	+·002	3·6	−0·2
Nov. ...	43·8	+1·5	+0·3	41·9	+0·5	39·8	+0·4	11·8	+0·3	—	·245	−·002	2·8	−0·1
Dec. ...	40·5	+1·4	+0·6	38·7	+0·2	36·3	−0·3	8·0	−1·4	—	·214	−·004	2·5	−0·1
Means...	44·9	+1·3	+0·4	43·0	+0·4	40·8	+0·1	10·8	−1·0	—	·257	−·001	3·0	−0·1

Note.—In reading this table it will be borne in mind that the sign (—) minus signifies

The mean temperature of the air for October was 50°·4, being 0°·9 and 0°·4 above the averages of 112 years and 42 years respectively; it was 0°·4 lower than in 1882, 5°·1 higher than in 1881, and 4°·2 higher than in 1880.

The mean temperature for November was 43°·8, being 1°·5 and 0°·3 above the averages of 112 years and 42 years respectively; it was 0°·3 higher than in 1882, 4°·9 lower than in 1881, and 1°·3 higher than in 1880.

The mean temperature for December was 40°·5, being 1°·4 and 0°·6 above the averages of 112 years and 42 years respectively; it was 0°·4 and 0°·7, respectively, above 1882 and 1881, and 2°·7 lower than in 1880.

The mean temperature for the quarter was 44°·9, being 1°·3 and 0°·4 above the averages of 112 years and 42 years respectively.

for the Year ended 31st December, **1883.**

Registrar-General by JAMES GLAISHER, ESQ., F.R.S., &c.]

Degree of Humidity.		Reading of Barometer.		Weight of a Cubic Foot of Air.		Rain.		Daily Horizontal Movement of the Air.	Reading of Thermometer on Grass.					1883.
									Number of Nights it was			Lowest Reading at Night.	Highest Reading at Night.	
Mean.	Diff. from Average of 42 Years	Mean.	Diff. from Average of 42 Years.	Mean.	Diff. from Average of 42 Years.	Amnt.	Diff. from Average of 67 Years.		At or below 30°.	Between 30° and 40°.	Above 40°.			Months.
		In.	In.	Grs.	Grs.	In.	In.	Miles.				°	°	
87	0	29·735	−·017	550	− 4	1·69	−0·20	339	17	13	1	21·9	49·5	January
86	+ 1	29·904	+·115	551	− 2	2·89	+1·32	349	7	20	1	25·7	41·1	Feb.
76	− 5	29·749	·000	556	+ 6	0·78	−0·77	337	24	7	0	14·3	37·9	March
83	+ 1	29·796	+·033	552	0	Sum 5·36	Sum +0·35	Mean 342	Sum 48	Sum 40	Sum 2	Lowest 14·3	Highst 49·5	Means
79	− 1	29·826	+·076	545	+ 2	1·70	−0·06	227	13	13	4	18·6	48·1	April
76	− 1	29·784	−·007	538	− 3	1·71	−0·36	216	5	17	9	23·9	49·0	May
76	+ 1	29·793	−·012	531	− 1	1·34	−0·66	255	0	9	21	31·0	56·3	June
77	0	29·801	+·019	538	− 1	Sum 4·75	Sum −1·08	Mean 243	Sum 18	Sum 39	Sum 34	Lowest 18·6	Highst 56·3	Means
78	+ 2	29·688	−·109	528	0	1·99	−0·57	273	0	3	28	37·2	53·1	July
76	− 1	29·841	+·060	529	+ 1	0·72	−1·71	252	0	7	24	32·8	56·0	August
86	+ 5	29·648	−·154	531	− 2	3·82	+1·41	266	0	8	22	32·3	56·9	Sept.
80	+ 2	29·726	−·029	529	0	Sum 6·53	Sum −0·12	Mean 264	Sum 0	Sum 18	Sum 74	Lowest 32·3	Highst 56·9	Means
86	0	29·800	+·092	541	+ 1	1·59	−1·25	294	1	22	8	29·6	50·1	October
86	− 2	29·659	−·084	546	− 1	2·84	+0·50	322	6	19	5	23·7	44·8	Nov.
85	− 4	29·983	+·195	555	+ 4	0·83	−1·18	369	5	26	0	24·7	38·9	Dec.
86	− 2	29·814	+·068	547	+ 1	Sum 5·26	Sum −1·93	Mean 328	Sum 12	Sum 67	Sum 13	Lowest 23·7	Highst 50·1	Means

below the average, and that the sign (+) plus signifies above the average.

The mean high day temperatures for the air in October was 57°·1, being 1°·0 lower than the average of 42 years; in November it was 49°·6, being 0°·7 higher than the average, and in December was 44°·1, being 0°·6 lower than the average.

The mean low night temperature of the air in October was 44°·5, being 1°·0 above the average of 42 years; in November it was 37°·8, being 0°·5 higher than the average, and in December was 36°·2, being 1°·0 higher than the average.

Therefore, the high day temperature was cold during the day in October and warm at night; in November, being warm both day and night, and in December the days were cold and the nights warm.

The mean daily range of temperature in October was 2°·0 smaller than the average, in November it was 0°·3 greater than the average, and in December it was 1°·4 smaller than the average.

No. II.—SCOTLAND.

BIRTHS, DEATHS, AND MARRIAGES, IN THE YEAR ENDED 31ST DECEMBER, 1883.

I.—*Serial Table:—Number of* BIRTHS, DEATHS, *and* MARRIAGES *in Scotland, and their Proportion to the Population estimated to the Middle of each Year, during each Quarter of the Years* **1883-79** *inclusive.*

	1883.		1882.		1881.		1880.		1879.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
1st Quarter—										
Births	31,342	3·32	31,206	3·30	30,860	3·30	31,319	3·38	31,268	3·41
Deaths	22,012	2·33	18,265	1·93	21,284	2·27	20,751	2·24	21,950	2·40
Marriages	6,530	0·69	6,589	0·70	6,483	0·69	6,006	0·65	5,828	0·64
Mean Temperature	38°·2		42°·2		33°·2		39°·9		34°·2	
2nd Quarter—										
Births	32,420	3·40	33,346	3·52	33,351	3·56	33,827	3·65	32,968	3·60
Deaths	20,386	2·14	18,293	1·93	17,889	1·91	19,711	2·13	18,784	2·05
Marriages	6,814	0·71	6,609	0·69	6,208	0·66	6,224	0·67	6,050	0·66
Mean Temperature	48°·6		48°·8		48°·5		49°·5		46°·8	
3rd Quarter—										
Births	30,087	3·12	30,718	3·25	31,158	3·33	30,179	3·26	31,436	3·43
Deaths	16,537	1·72	16,886	1·78	15,602	1·67	17,047	1·84	15,115	1·65
Marriages	5,890	0·62	5,957	0·63	5,787	0·62	5,500	0·59	5,061	0·55
Mean Temperature	55°·0		55°·5		54°·2		57°·1		54°·1	
4th Quarter—										
Births	30,163	3·17	30,912	3·27	30,845	3·29	29,327	3·17	30,064	3·28
Deaths	17,932	1·86	19,522	2·06	17,526	1·87	18,286	1·97	17,480	1·91
Marriages	7,621	0·79	7,419	0·78	7,470	0·80	6,759	0·73	6,523	0·71
Mean Temperature	42°·1		40°·2		42°·7		39°·2		40°·4	
Year—										
Population	3,825,744		3,785,400		3,744,685		3,705,995		3,665,443	
Births	124,462	3·25	126,182	3·33	126,214	3·37	124,652	3·36	125,736	3·43
Deaths	76,867	2·01	72,966	1·93	72,301	1·93	75,795	2·05	73,329	2·00
Marriages	26,855	0·80	26,574	0·70	25,948	0·69	24,489	0·66	23,462	0·64

II.—*Special Average Table:—Number of Births, Deaths, and Marriages in Scotland and in the Town and Country Districts for each Quarter of the Year ending* 31*st December*, **1883**, *and their Proportion to the Population; also the Number of Illegitimate Births, and their Proportion to the Total Births.*

Registration Groups of Districts.	Total Births.			Illegitimate Births.			Deaths.			Marriages.		
	Number	Per Cent.	Ratio. One in every	Number.	Per Cent	Ratio. One in every	Number.	Per Cent.	Ratio. One in every	Number	Per Cent.	Ratio. One in every
1st Quarter—												
Scotland	31,342	3·32	30	2,631	8·4	11·9	22,012	2·33	43	6,530	0·69	144
Principal towns	13,079	3·62	28	1,019	7·8	12·8	9,957	2·76	36	3,260	0·90	111
Large ,,	3,567	3·58	28	248	7·0	14·4	2,293	2·30	43	807	0·81	123
Small ,,	6,617	3·30	30	540	8·2	12·3	4,457	2·22	45	1,151	0·57	174
Mainland rural	7,323	2·93	34	783	10·7	9·4	4,707	1·88	53	1,099	0·44	228
Insular ,,	756	2·36	42	41	5·4	18·4	598	1·87	54	213	0·66	151
2nd Quarter—												
Scotland	32,420	3·40	29	2,530	7·8	12·8	20,386	2·14	47	6,814	0·71	149
Principal towns	13,705	3·75	27	1,079	7·9	12·7	9,637	2·64	38	3,362	0·92	109
Large ,,	3,758	3·73	27	260	6·9	14·5	2,112	2·10	48	734	0·73	137
Small ,,	6,695	3·30	30	456	6·8	14·7	3,899	1·92	52	1,224	0·60	166
Mainland rural	7,567	2·99	33	691	9·1	11·0	4,135	1·63	61	1,416	0·56	179
Insular ,,	695	2·14	47	44	6·3	15·8	603	1·86	54	78	0·24	416
3rd Quarter—												
Scotland	30,087	3·12	32	2,484	8·2	12·8	16,537	1·72	58	5,890	0·62	163
Principal towns	12,460	3·38	30	965	7·7	13·0	7,597	2·06	49	3,099	0·84	119
Large ,,	3,287	3·23	31	216	6·6	15·2	1,792	1·76	57	636	0·62	160
Small ,,	6,396	3·12	32	524	8·2	12·2	3,272	1·59	63	1,128	0·55	182
Mainland rural	7,130	2·79	36	733	10·3	9·7	3,447	1·35	74	975	0·38	262
Insular ,,	814	2·48	40	46	5·7	17·7	429	1·31	77	52	0·16	630
4th Quarter—												
Scotland	30,613	3·17	32	2,390	7·8	12·8	17,932	1·86	54	7,621	0·79	126
Principal towns	12,899	3·49	29	953	7·4	13·6	8,120	2·20	45	3,393	0·92	109
Large ,,	3,290	3·23	31	218	6·6	15·1	2,020	1·99	50	702	0·69	145
Small ,,	6,454	3·15	32	496	7·7	13·0	3,547	1·73	58	1,619	0·79	126
Mainland rural	7.103	2·78	36	685	9·6	10·3	3,779	1·47	68	1,732	0·68	147
Insular ,,	867	2·64	38	38	4·4	22·9	466	1·42	70	175	0·53	187

Population of Scotland.

Population.	Scotland.	Principal Towns.	Large Towns.	Small Towns.	Mainland Rural.	Insular Rural.
By Census of 1881	3,735,573	1,411,536	388,797	791,250	1,013,602	130,388
Estimated to the middle of 1883	3,825,744	1,464,201	403,626	813,197	1,014,690	130,030

III.—*Bastardy Table:—Proportion of* ILLEGITIMATE *in every Hundred* BIRTHS *in the Divisions and Counties of* SCOTLAND, *during each quarter of the Year ending 31st December,* **1883**; *with the Corresponding Figures for* **1882** *added for Comparison.*

Divisions and Counties.	Per Cent. for the Quarters ending 1883.				Per Cent. for the Quarters ending 1882.			
	31st March.	30th June.	30th Sept.	31st Dec.	31st March.	30th June.	30th Sept.	31st Dec.
SCOTLAND	8·4	7·8	8·2	7·8	8·7	7·9	8·5	8·4
Divisions—								
Northern	7·6	8·5	7·8	6·6	9·5	8·2	7·9	7·0
North-Western	4·8	6·9	5·5	5·2	6·0	6·9	6·5	5·6
North-Eastern	14·1	12·2	13·2	13·3	15·1	13·2	14·9	14·0
East Midland	8·2	8·7	9·2	8·7	9·0	8·1	8·8	9·1
West Midland	6·5	5·3	6·7	4·9	7·3	6·0	7·7	6·1
South-Western	7·0	6·5	7·0	6·2	7·1	6·4	6·7	6·8
South-Eastern	8·0	7·5	7·3	7·4	7·5	7·6	7·1	8·1
Southern	15·6	12·2	12·8	15·0	14·6	11·9	15·0	15·1
Counties—								
Shetland	3·1	3·4	7·6	3·3	4·6	6·2	5·9	2·1
Orkney	7·8	6·4	4·5	6·9	10·6	5·2	6·6	8·1
Caithness	10·5	11·2	11·9	8·5	10·7	11·4	12·0	9·2
Sutherland	6·1	13·0	3·5	5·9	10·6	7·8	3·9	7·3
Ross and Cromarty	3·2	5·8	5·4	3·8	5·0	5·6	4·9	4·6
Inverness	6·3	7·7	5·7	6·6	6·9	7·7	8·1	6·6
Nairn	15·4	8·6	10·6	15·5	3·6	6·8	13·1	15·1
Elgin	15·4	13·7	16·5	14·1	15·1	11·7	17·9	12·9
Banff	18·0	11·7	14·2	14·7	19·1	14·1	15·8	17·8
Aberdeen	13·4	12·4	12·9	12·9	15·1	13·8	14·9	13·4
Kincardine	12·8	10·0	10·4	12·7	10·6	10·2	9·5	11·5
Forfar	9·2	8·2	10·3	10·6	10·3	9·4	9·9	10·6
Perth	9·3	9·9	11·5	8·7	8·8	7·5	10·1	9·8
Fife	6·2	5·5	6·6	5·9	7·3	6·3	6·8	6·9
Kinross	6·5	5·4	8·3	16·1	4·5	6·9	9·5	5·0
Clackmannan	6·2	7·9	5·1	5·2	7·3	10·2	5·9	3·7
Stirling	6·1	6 1	6·9	4·3	8·1	5·4	8·1	4·7
Dumbarton	5·2	3·7	4·5	4·5	6·5	5·8	7·4	8·1
Argyll	8·6	6·3	8·3	6·1	6·6	7·9	8·0	5·7
Bute	7·1	5·3	11·2	7·0	7·9	4·3	5·8	6·6
Renfrew	5·8	5·1	6·3	5·3	6·2	5·9	5·9	5·7
Ayr	6·8	6·7	7·6	5·5	9·4	7·2	8·5	6·6
Lanark	7·3	6·8	7·1	6·5	6·9	6·3	6·5	7·0
Linlithgow	8·9	6·7	9·2	7·0	7·5	5·6	6·9	6·8
Edinburgh	7·6	7·9	6·7	7·8	7·1	7·8	6·8	7·9
Haddington	7·3	4·4	8·4	6·2	7·0	6·8	7·7	8·4
Berwick	12·2	7·5	11·9	6·7	13·8	11·3	11·6	9·4
Peebles	6·5	10·3	7·0	5·9	13·0	6·9	5·9	8·4
Selkirk	9·5	7·2	6·4	5·5	4·7	5·7	5·4	10·8
Roxburgh	12·1	8·5	7·8	12·8	10·5	9·1	10·6	10·2
Dumfries	13·4	13·5	14·2	15·2	15·6	12·5	16·1	17·9
Kirkcudbright	17·1	13·6	13·6	13·2	14·9	10·8	16·1	18·8
Wigtown	23·2	13·2	15·9	19·7	17·8	15·7	17·8	13·7

IV.—*Divisional Table:*—MARRIAGES, BIRTHS, *and* DEATHS *Registered in the Year ended 31st December*, **1883.**

(Compiled from the Registrar-General's Quarterly Returns.)

1 DIVISIONS. (Scotland)	2 AREA in Statute Acres.	3 POPULATION, 1881. (*Persons.*)	4 Marriages.	5 Births.	6 Deaths.
		No.	No.	No.	No.
SCOTLAND ..... *Totals*	19,639,377	3,735,573	26,855	124,462	76,867
I. Northern	2,261,622	123,984	533	2,918	1,884
II. North-Western.....	4,739,876	165,856	748	4,130	2,934
III. North-Eastern	2,429,594	418,250	2,644	13,330	6,793
IV. East Midland	2,790,492	602,421	4,049	17,956	11,960
V. West Midland	2,693,176	283,460	1,606	9,071	5,279
VI. South-Western.....	1,462,397	1,385,447	12,097	53,675	33,906
VII. South-Eastern	1,192,524	546,658	4,069	17,364	10,352
VIII. Southern	2,069,696	209,497	1,109	6,018	3,759

No. III.—GREAT BRITAIN AND IRELAND.

SUMMARY *of* MARRIAGES, *in the Year ended 30th September*, **1883**; *and of* BIRTHS *and* DEATHS, *in the Year ended 31st December*, **1883.**

(Compiled from the Quarterly Returns of the respective Registrars-General.)

COUNTRIES.	[000's omitted.]		Marriages.	Per 1,000 of Population.	Births.	Per 1,000 of Population.	Deaths.	Per 1,000 of Population.
	Area in Statute Acres.	Population, 1881. (*Persons.*)						
		No.	No.	Ratio.	No.	Ratio.	No.	Ratio.
England and Wales	37,319,	25,974,	204,349	7·8	889,815	34·2	522,662	20·1
Scotland.....	19,639,	3,736,	26,855	7·1	124,462	33·3	76,867	20·5
Ireland	20,323,	5,175,	21,144	4·0	118,224	22·8	96,388	18·6
GREAT BRITAIN AND IRELAND	77,281,	34,885,	252,348	7·2	1,132,501	32·4	695,917	19·9

Note.—The numbers against Ireland represent the marriages, births, and deaths that the local registrars have *succeeded* in recording; but how far the registration approximates to absolute completeness, does not at present appear to be known. It will be seen that the Irish ratios of marriages, births, and deaths are much under those of England and Scotland.—ED. *S. J.*

Trade of United Kingdom, for the Years 1882-78.—*Declared Value of the Total Exports of* **Foreign** *and* **Colonial** *Produce and Manufactures to each Foreign Country and British Possession.*

Merchandise Exported to the following Foreign Countries, &c.	[000's omitted.] 1882.	1881.	1880.	1879.	1878.
I.—Foreign Countries.	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark, & Iceland, & Heligoland	4,674,	5,218,	5,416,	4,742,	4,719,
Central Europe; viz., Germany, Holland and Belgium	25,916,	24,702,	25,732,	23,913,	20,715,
Western Europe; viz., France, Portugal, (with Azores, Madeira, &c.), and Spain, (with Gibraltar and Canaries)	14,070,	15,102,	13,895,	13,061,	12,973,
Southern Europe; viz., Italy, Austrian Empire, Greece, Ionian Islands, and Malta	1,738,	1,426,	1,418,	1,616,	1,766,
Levant; viz., Turkey, Roumania,* Syria and Palestine, and Egypt	773,	786,	675,	662,	737.
Northern Africa; viz., Tripoli, Tunis, Algeria, and Morocco	142,	56,	62,	74,	178,
Western Africa	218,	186,	219,	221,	257,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	—	—	—	—	—
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	61,	—	851,	29,	328,
South Sea Islands	—	—	—	—	—
China, including **Hong Kong** and Japan	678,	782,	1,163,	1,030,	382,
United States of America	7,738,	6,987,	7,098,	5,197,	2,980,
Mexico and Central America	124,	104,	80,	98,	121,
Foreign West Indies and Hayti	841,	15,	15,	686,	689,
South America (Northern), New Granada, Venezuela and Ecuador	90,	63,	58,	37,	37,
„ **(Pacific)**, Peru, Bolivia, Chili, and Patagonia	336,	302,	313,	260,	323,
„ **(Atlantic)**, Brazil, Uruguay, and Argentine Confed.	578,	355,	358,	420,	755,
Other countries (unenumerated)	104,	121,	159,	108,	109,
Total—Foreign Countries	58,081,	56,205,	57,512,	52,172,	47,329,
II.—British Possessions.					
British India, Ceylon, and Singapore	1,722,	2,031,	1,627,	1,540,	1,536,
Austral. Cols.—New South Wales and Victoria, So. Aus., W. Aus., Tasm., and N. Zealand	3,086,	2,604,	1,817,	1,689,	1,952,
British North America	983,	897,	807,	674,	597,
„ W.Indies with Btsh.Guiana & Honduras	327,	342,	407,	291,	306,
Cape and Natal	582,	619,	576,	517,	546,
Brt. W. Co. of Af., Ascension and St. Helena	83,	69,	101,	102,	99,
Mauritius	54,	43,	28,	25,	22,
Channel Islands	209,	204,	232,	214,	198,
Other possessions	66,	46,	247,	27,	50,
Total—British Possessions	7,112,	6,855,	5,842,	5,080,	5,306,
General Total £	65,193,	63,060,	63,354,	57,272,	52,635,

* Wallachia and Moldavia to 1878, and Roumania in 1879.

Trade of United Kingdom, 1883-82-81.—*Distribution of* **Exports*** *from United Kingdom, according to their Declared Real Value; and the Declared Real Value (Ex-duty) of* **Imports** *at Port of Entry, and therefore including Freight and Importer's Profit.*

Merchandise (*excluding Gold and Silver*) Imported from, and Exported to, the following Foreign Countries, &c.	[000's omitted.] 1883. Imports from	1883. *Exports to*	1882. Imports from	1882. *Exports to*	1881. Imports from	1881. *Exports to*
I.—Foreign Countries:	£	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark & Iceland, & Heligoland	39,058,	11,171,	38,061,	11,585,	27,700,	11,566,
Central Europe; viz., Germany, Holland, and Belgium	69,134,	36,626,	65,474,	36,136,	57,916,	33,275,
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	54,039,	24,380,	54,771,	24,030,	53,963,	23,812,
Southern Europe; viz., Italy, Austrian Empire, Greece, Roumania, and Malta	11,798,	11,813,	12,561,	10,226,	9,860,	10,887,
Levant; viz., Turkey, Asiatic and European (including Cyprus), and Egypt	15,352,	10,062	12,504,	8,880,	13,299.	10,059,
Northern Africa; viz., Tripoli, Tunis, Algeria and Morocco	1,729,	781,	1,406,	714,	1,527,	646,
Western Africa	1,739,	1,636,	1,713,	1,227,	1,583,	1,125,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	999,	845,	821,	596,	728,	605,
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	5,876,	3,599,	6,052,	3,369,	5,057,	3,263,
South Sea Islands	121,	141,	114,	101,	43,	130,
China and Japan, including **Hong Kong**	12,058,	9,395,	12,110,	9,761,	12,426,	12,421,
United States of America	98,521,	27,383,	87,855,	30,999,	102,880,	29,788,
Mexico and Central America	1,869,	2,391,	2,131,	2,600,	1,913,	2,543,
Foreign West Indies, Hayti, &c.	1,509,	3,191,	2,091,	3,070,	1,787,	3,140,
South America (Northern), New Granada, Venezuela, and Ecuador	1,379,	2,005,	1,607,	1,718,	1,891,	1,921,
„ **(Pacific)**, Peru, Bolivia, Chili, and Patagonia	5,985,	2,881,	6,494,	4,075,	5,222,	3,426,
„ **(Atlantic)** Brazil, Uruguay, and Argentine Republic	7,741,	12,844,	8,544,	12,484,	7,348,	11,391,
Whale Fisheries; Grnlnd., Davis' Straits, Southn. Whale Fishery, Falkland Islands, and French Possessions in North America	192,	34,	214,	85,	165,	24,
Total—Foreign Countries	329,099,	161,178,	314,523,	161,656,	305,308,	160,022,
II.—British Possessions:						
British India, Ceylon, and Singapore	45,835,	35,218,	46,944,	32,027,	38,603,	32,632,
Austral. Cols.—N. So. W., Victoria & Queensld.	16,925,	16,944,	16,710,	17,309,	17,860,	14,806,
„ „ So. Aus., W. Aus., Tasm., N. Zealand, & Fiji Islands	9,026,	7,267,	8,449,	8,047,	9,130,	6,530,
British North America	12,215,	9,154,	10,307,	9,703,	11,226,	8,406,
„ W. Indies with Btsh. Guiana & Honduras	5,137,	3,568,	6,780,	3,328,	5,907,	2,723,
Cape and Natal	5,868,	4,558,	6,263,	7,525,	5,406,	7,071,
Brt. W. Co. of Af., Ascension and St. Helena	729,	874,	626,	817,	520,	663,
Mauritius	415,	506,	449,	495,	450,	443,
Channel Islands	796,	563,	847,	570,	757,	643,
Total—British Possessions	96,946,	78,652,	97,375,	79,821,	89,859,	73,917,
General Total £	426,045,	239,830,	411,898,	241,477,	395,167,	233,939,

* *i.e.*, British and Irish produce and manufactures.

IMPORTS.—(United Kingdom.)—**For the Years 1883-82-81-80-79.**—*Declared Real Value (Ex-duty), at Port of Entry (and therefore including Freight and Importer's Profit), of Articles of Foreign and Colonial Merchandise Imported into the United Kingdom.*

[000's omitted.]

Foreign Articles Imported.		1883.	1882.	1881.	1880.	1879.
		£	£	£	£	£
Raw Matls.–*Textile*, &c.	Cotton, Raw ...	44,279,	46,193,	43,502,	42,765,	36,279,
	Wool	26,718,	27,207,	27,499,	28,356,	24,930,
	Silk*	14,282,	14,905,	15,066,	17,461,	16,825,
	Flax	2,877,	3,608,	3,398,	4,070,	3,581,
	Hemp and Jute	6,877,	6,501,	6,159,	5,894,	4,943,
	Indigo	2,467,	2,610,	2,346,	1,698,	1,901,
		97,500,	101,024,	97,970,	100,244,	88,459,
,, ,,	*Various.* Hides	3,804,	3,741,	6,355,	6,911,	5,109,
	Oils	3,461,	2,900,	3,359,	3,418,	3,477,
	Metals	13,997,	14,392,	12,448,	15,794,	10,619,
	Tallow	2,100,	2,256,	2,102,	2,310,	2,100,
	Timber	17,138,	17,168,	14,957,	16,583,	10,726,
		40,500,	40,457,	39,221,	46,016,	32,031,
,, ,,	*Agricltl.* Guano	722,	390,	489,	805,	704,
	Seeds	9,085,	8,608,	7,563,	7,597,	7,098,
		9,807,	8,998,	8,052,	8,402,	7,802,
Tropical, &c., Produce.	Tea	11,769,	11,363,	11,345,	11,752,	11,373,
	Coffee and Chich.	4,992,	5,288,	5,267,	7,062,	7,324,
	Sugar & Molasses	25,086,	24,976,	24,404,	22,970,	22,351,
	Tobacco	2,900,	2,563,	2,623,	2,901,	1,975,
	Rice	3,181,	3,297,	3,666,	3,750,	3,481,
	Fruits	4,217,	4,055,	4,125,	3,288,	3,794,
	Wines	5,460,	5,463,	5,660,	6,483,	5,380,
	Spirits	1,744,	1,875,	1,676,	1,979,	2,895,
		59,349,	58,880,	58,766,	60,185,	58,573,
Food	Grain and Meal.	67,040,	63,196,	60,557,	62,369,	60,596,
	Provisions	42,518,	36,808,	41,296,	43,438,	35,901,
		109,558,	100,004,	101,853,	105,807,	96,497,
Remainder of Enumerated Articles		61,719,	57,766,	47,694,	48,582,	41,955,
Total Enumerated Imports		378,433,	367,129,	353,556,	368,240,	325,317,
Add for Unenumerated Imports (say)		47,171,	44,872,	42,100,	41,750,	36,810,
Total Imports		425,604,	412,001,	395,656,	409,990,	362,127,

* "Silk," inclusive of manufactured silk, "not made up."

EXPORTS.—(United Kingdom.)—**For the Years 1883-82-81-80-79.**—*Declared Real Value, at Port of Shipment, of Articles of* BRITISH *and* IRISH *Produce and Manufactures Exported from the United Kingdom.*

[000's omitted.]

BRITISH PRODUCE, &c., EXPORTED.		1883.	1882.	1881.	1880.	1879.
		£	£	£	£	£
MANFRS.—*Textile.*	Cotton Manufactures ..	62,937,	62,945,	65,923,	63,657,	51,843,
	,, Yarn	13,511,	12,867,	13,167,	11,906,	12,103,
	Woollen Manufactures	18,320,	18,789,	18,122,	17,270,	15,851,
	,, Yarn	3,267,	3,399,	3,224,	3,344,	3,714,
	Silk Manufactures.....	2,426,	2,692,	2,565,	2,029,	1,696,
	,, Yarn	707,	828,	1,009,	685,	694,
	Linen Manufactures	5,439,	5,967,	5,844,	5,826,	5,474,
	,, Yarn	1,059,	1,038,	1,057,	978,	1,075,
		107,666,	108,525,	110,911,	105,695,	92,450,
,, *Sewed.*	Apparel	3,636,	4,170,	3,710,	3,194,	3,198,
	Haberdy. and Mllnry.	3,879,	4,258,	4,190,	3,869,	3,487,
		7,515,	8,428,	7,900,	7,063,	6,685,
METALS, &c.	Hardware	3,756,	4,112,	3,859,	3,512,	3,019,
	Machinery	13,444,	11,963,	9,944,	9,262,	7,283,
	Iron	28,584,	31,579,	27,576,	28,307,	19,439,
	Copper and Brass.....	4,005,	3,782,	3,823,	3,638,	3,380,
	Lead and Tin	1,077,	1,158,	1,139,	984,	1,019,
	Coals and Culm	10,642,	9,561,	8,794,	8,379,	7,202,
		61,508,	62,155,	55,135,	54,082,	41,342,
Ceramic Manufcts.	Earthenware and Glass	3,280,	3,283,	3,059,	2,896,	2,526,
Indigenous Mnfrs. and Products.	Beer and Ale.....	1,816,	1,872,	1,725,	1,730,	1,759,
	Butter	212,	220,	205,	201,	235,
	Cheese	59,	65,	51,	51,	55,
	Candles	148,	135,	138,	143,	136,
	Salt.....	645,	570,	587,	604,	552,
	Spirits	789,	756,	769,	532,	454,
	Soda	—	—	—	—	—
		3,669,	3,618,	3,475,	3,261,	3,191,
Various Manufcts.	Books, Printed	1,176,	1,173,	1,101,	971,	953,
	Furniture	—	—	—	—	—
	Leather Manufactures	2,398,	2,833,	2,461,	2,096,	2,058,
	Soap	449,	458,	397,	443,	433,
	Plate and Watches	338,	352,	285,	233,	213,
	Stationery	883,	882,	796,	723,	664,
		5,244,	5,698,	4,040,	4,466,	4,321,
Remainder of Enumerated Articles		28,146,	25,844,	25,563,	24,843,	22,936,
Unenumerated Articles.....		22,802,	23,926,	22,856,	20,505,	18,053,
TOTAL EXPORTS.....		239,830,	241,477,	233,939,	222,811,	191,504

SHIPPING.—(United Kingdom.)—*Account of Tonnage of Vessels Entered and Cleared with Cargoes, from and to Various Countries, during the* **Years** *ended December,* **1883-82-81.**

Countries from whence Entered and to which Cleared.	Total British and Foreign.					
	1883.		1882.		1881.	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
FOREIGN COUNTRIES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Russia { Northern ports	1,573,043	1,143,214	1,572,277	1,236,101	1,200,111	1,067,482
Russia { Southern „	454,222	280,952	443,379	262,090	199,790	196,252
Sweden	1,390,679	916,110	1,357,908	896,982	1,161,035	793,600
Norway	966,000	563,777	930,236	564,359	862,559	524,111
Denmark	299,924	887,885	284,297	790,623	255,018	753,094
Germany	2,109,202	2,804,169	1,867,051	2,664,678	1,697,706	2,476,010
Holland	1,479,657	1,513,252	1,447,736	1,475,274	1,355,811	1,401,750
Belgium	1,195,207	1,145,969	1,083,521	1,050,429	957,530	983,520
France	2,075,005	4,044,855	2,005,471	3,818,367	1,966,635	3,525,879
Spain	2,236,854	1,023,441	2,400,816	928,619	1,869,910	840,146
Portugal	214,350	421,030	235,270	377,292	209,713	345,044
Italy	288,891	1,633,207	302,734	1,396,790	296,496	1,241,050
Austrian territories	64,163	84,289	59,162	71,982	36,451	66,440
Greece	82,271	125,453	95,908	106,646	71,761	94,571
Roumania	272,228	111,739	346,918	86,903	201,366	60,628
Turkey	296,703	312,745	206,155	251,284	195,560	245,369
Egypt	346,073	683,530	248,216	567,086	281,010	641,123
United States of America	4,848,670	3,410,235	4,297,362	3,434,556	5,034,323	3,796,786
Mexico, Foreign West Indies, and Central America	204,196	550,922	196,651	523,525	185,723	462,111
Brazil	229,667	599,457	252,782	536,331	251,718	521,584
Peru	116,954	61,690	106,281	68,182	62,367	50,169
Chili	162,959	219,156	127,584	263,002	117,921	302,595
China	183,051	68,649	167,097	34,127	152,059	23,345
Other countries	844,046	1,210,408	779,436	1,013,996	748,246	919,643
Total, Foreign Countries	21,934,015	23,816,134	20,814,248	22,419,224	19,370,819	21,332,302
BRITISH POSSESSIONS.						
North American Colonies	1,498,577	819,866	1,255,468	706,480	1,364,928	769,899
East Indies, including Ceylon, Singapore, and Mauritius	1,580,050	2,020,283	1,400,936	1,833,289	1,249,255	1,819,864
Australia and New Zealand	489,908	925,993	479,551	883,952	466,165	749,959
West Indies	149,767	196,457	164,664	195,291	158,595	190,183
Channel Islands	353,465	235,980	335,892	239,876	301,561	225,490
Other possessions	304,536	1,358,447	364,290	1,420,751	313,385	1,248,996
Total, British Possessions	4,376,303	5,557,026	4,000,801	5,279,639	3,853,889	5,004,391
TOTAL FOREIGN COUNTRIES AND BRITISH POSSESSIONS.						
Twelve Months ended December, 1883	26,310,318	29,373,160	—	—	—	—
Twelve Months ended December, '82	—	—	24,815,049	27,698,863	—	—
Twelve Months ended December, '81	—	—	—	—	23,224,708	26,336,693

GOLD AND SILVER BULLION AND SPECIE.—(United Kingdom.)—*Declared Real Value of,* IMPORTED AND EXPORTED *for the* **Years 1883-82-81.**

[000's omitted.]

Countries.	1883.		1882.		1881.	
	Gold.	*Silver.*	Gold.	*Silver.*	Gold.	*Silver.*
Imported from—	£	£	£	£	£	£
Australia	2,256,	33,	2,997,	55,	4,470,	59,
S. America, Brazil, Mexico, W. Indies	817,	3,831,	739,	3,630,	846,	2,158,
United States	10,	2,803,	6,100,	1,922,	23,	2,598,
	3,083,	6,667,	9,836,	5,607,	5,339,	4,815,
France	1,272,	2,070,	1,832,	2,644,	2,130,	1,460,
Germany, Holland, Belg., and Sweden	1,744,	336,	1,373,	598,	1,572,	273,
Portugal, Spain, and Gibraltar	558,	61,	766,	63,	105,	33,
Malta and Egypt	78,	29,	309,	19,	415,	31,
China, with Hong Kong and Japan	199,	59,	6,	36,	124,	13,
West Coast of Africa	95,	66,	111,	51,	96,	64,
All other Countries	704,	180,	143,	226,	182,	213,
Totals Imported	7,733,	9,468,	14,376,	9,244,	9,963,	6,902,
Exported to—						
France	101,	189,	3,290,	350,	1,089,	704,
Germany, Holland, Belg. & Sweden	1,069,	391,	958,	335,	641,	965,
Portugal, Spain, and Gibraltar	1,452,	1,206,	1,047,	1,204,	1,063,	348,
	2,622,	1,786,	5,295,	1,889,	2,793,	2,017,
B. India, China, Hong Kong and Japan	935,	7,030,	1,255,	6,423,	988,	4,368,
United States	938,	49,	92,	29,	7,387,	31,
South Africa	—	11,	6,	28,	540,	2,
S. America, Brazil, Mexico, W. Indies	1,502,	227,	769,	173,	1,584,	306,
All other Countries	1,094,	219,	4,606,	423,	2,207,	280,
Totals Exported	7,091,	9,322,	12,023,	8,965,	15,499,	7,004,
Excess of imports	642,	146,	2,353,	279,	—	—
„ exports	—	—	—	—	5,536,	102,

BRITISH CORN.—*Gazette Average Prices* (England and Wales) *Weekly for* 1883.

[This Table is communicated by the Commercial Department, Board of Trade.]

Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)						Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)					
	Wheat.		Barley.		Oats.			Wheat.		Barley.		Oats.	
1883.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	1883.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Jan. 6	40	7	32	4	21	–	July 7	42	4	28	11	23	5
„ 13	40	–	32	3	20	7	„ 14	42	2	29	2	24	1
„ 20	40	–	32	6	20	2	„ 21	42	2	27	10	23	2
„ 27	40	4	32	9	20	10	„ 28	42	1	27	6	22	8
Feb. 3	40	6	32	9	20	11	Aug. 4	43	3	30	–	23	10
„ 10	40	8	32	10	21	3	„ 11	43	6	27	9	23	11
„ 17	41	–	33	1	21	9	„ 18	43	10	28	9	23	2
„ 24	41	9	33	5	21	7	„ 25	43	8	29	4	22	11
March 3	42	6	33	8	21	9	Sept. 1	43	2	30	5	22	2
„ 10	42	6	33	7	22	3	„ 8	41	8	32	10	20	11
„ 17	42	2	33	11	22	5	„ 15	41	8	33	–	20	8
„ 24	42	4	33	3	22	1	„ 22	41	9	33	9	20	6
„ 31	42	–	33	1	21	9	„ 29	41	–	33	–	20	–
April 7	42	–	33	2	21	8	Oct. 6	40	2	34	–	19	11
„ 14	42	1	33	3	21	11	„ 13	40	8	34	4	19	4
„ 21	41	8	32	10	21	9	„ 20	40	5	34	6	19	11
„ 28	42	–	32	9	21	10	„ 27	40	6	35	–	19	9
May 5	42	10	32	4	23	2	Nov. 3	40	3	34	7	19	7
„ 12	43	–	31	4	22	–	„ 10	40	1	34	2	19	5
„ 19	43	4	30	8	22	9	„ 17	40	3	33	4	19	11
„ 26	43	7	31	8	22	2	„ 24	40	5	32	10	19	7
June 2	43	5	29	3	22	5	Dec. 1	40	2	32	6	19	5
„ 9	43	4	28	2	22	10	„ 8	40	–	32	3	19	7
„ 16	42	9	25	6	22	10	„ 15	39	5	31	7	19	4
„ 23	42	5	31	6	22	6	„ 22	39	2	31	8	19	7
„ 30	42	3	29	8	23	5	„ 29	39	–	31	7	19	1

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES), *Summary of, for* **1883**, *with those for* **1882**, *added for Comparison.*

[This Table is communicated by the Commercial Department, Board of Trade.]

Average for	Per Imperial Quarter, 1883.						Per Imperial Quarter, 1882.					
	Wheat.		Barley.		Oats.		Wheat.		Barley.		Oats.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
January	40	2	32	5	20	7	45	7	32	9	20	5
February	40	11	33	–	21	4	46	–	32	2	20	11
March	42	3	33	6	22	–	44	7	30	3	21	2
First quarter	41	3	33	–	21	4	45	5	31	9	20	11
April	41	11	33	–	21	9	45	11	29	9	21	9
May	43	2	31	6	22	6	47	3	28	4	22	5
June	42	10	28	9	22	9	47	5	27	7	23	5
Second quarter	42	8	30	11	22	4	46	9	28	7	22	6
July	42	2	28	4	23	4	48	5	26	10	24	8
August	43	6	28	11	23	5	50	–	28	–	24	4
September	41	10	32	7	20	10	43	11	36	–	21	11
Third quarter	42	5	30	2	22	5	47	3	30	6	23	7
October	40	5	34	5	19	8	39	7	34	3	19	7
November	40	3	33	8	19	7	40	10	34	3	20	4
December	39	6	31	11	19	4	41	2	33	10	20	10
Fourth quarter	40	–	33	3	19	6	40	8	34	–	20	4
THE YEAR	41	7	31	10	21	5	45	1	31	2	21	10

REVENUE OF THE UNITED KINGDOM.

Net Produce in QUARTERS *and* YEARS *ended* 31*st* DEC., **1883-82-81-80.**

[000's omitted.]

QUARTERS, ended 31st Dec.	1883.	1882.	1883.		Corresponding Quarters.	
			Less.	More.	1881.	1880.
	£	£	£	£	£	£
Customs	5,477,	5,340,	—	137,	5,230,	5,376,
Excise	8,300,	8,155,	—	145,	8,212,	6,700,
Stamps	2,930,	2,850,	—	80,	2,961,	3,105,
Taxes	30,	30,	—	—	30,	35,
Post Office	1,880,	1,830,	—	50,	1,740,	1,677,
Telegraph Service	435,	430,	—	5,	400,	395,
	19,052,	18,635,	—	417,	18,573,	17,288,
Property Tax	805,	815,	10,	—	618,	660,
	19,857,	19,450,	10,	417,	19,191,	17,948,
Crown Lands	130,	130,	—	—	130,	135,
Interest on Advances	385,	385,	—	—	390,	404,
Miscellaneous	1,051,	1,033,	—	18,	1,209,	1,053,
Totals	21,423,	20,998,	10,	435,	20,920,	19,540,
			NET INCR. £425,			

YEARS, ended 31st Dec.	1883.	1882.	1883.		Corresponding Years.	
			Less.	More.	1881.	1880.
	£	£	£	£	£	£
Customs	19,810,	19,458,	—	352,	19,294,	19,268,
Excise	27,120,	27,108,	—	12,	27,252,	25,770,
Stamps	11,871,	11,570,	—	301,	11,369,	11,965,
Taxes	2,850,	2,790,	—	60,	2,745,	2,719,
Post Office	7,450,	7,160,	—	290,	6,875,	6,570,
Telegraph Service	1,750,	1,690,	—	60,	1,630,	1,570,
	70,851,	69,776,	—	1,075,	69,165,	67,862,
Property Tax	12,720,	9,882,	—	2,838,	11,068,	9,495,
	83,571,	79,658,	—	3,913,	80,233,	77,357
Crown Lands	380,	380,	—	—	370,	390,
Interest on Advances	1,210,	1,201,	—	9,	1,232,	1,337,
Miscellaneous	4,875,	5,106,	231,	—	4,847,	4,206,
Totals	90,036,	86,345,	231,	3,922,	86,682,	83,290,
			NET INCR. £3,691,			

LONDON CLEARING; CIRCULATION, PRIVATE AND PROVINCIAL.

The London Clearing, and the Average Amount of Promissory Notes in Circulation in ENGLAND *and* WALES *on Saturday in each Week during the Year* **1883**; *and in* SCOTLAND *and* IRELAND, *at the Dates, as under.*

[0,000's omitted.]

	ENGLAND AND WALES.				SCOTLAND.				IRELAND.		
DATES. *Saturday.*	*London:* Cleared in each Week on the preceding *Wednesday.*	Private Banks. (Fixed Issues, 3,55).	Joint Stock Banks. (Fixed Issues, 2,39).	TOTAL. (Fixed Issues, 5,94).	Average for Four Weeks ending	£5 and upwards	Under £5.	TOTAL. (Fixed Issues, 2,68).	£5 and upwards	Under £5.	TOTAL. (Fixed Issues, 6,35).
1883.	£	£	£	£	1883.	£	£	£	£	£	£
Jan. 6.....	143,92	1,73	1,71	3,44							
„ 13.....	117,68	1,74	1,71	3,45	Jan. 13...	1,87	4,00	5,96	4,53	3,45	7,98
„ 20.....	136,91	1,74	1,70	3,44							
„ 27.....	100,88	1,72	1,69	3,41							
Feb. 3.....	102,11	1,70	1,67	3,37							
„ 10.....	108,69	1,67	1,67	3,33	Feb. 10...	1,75	3,74	5,49	4,43	3,29	7,72
„ 17.....	132,49	1,65	1,65	3,30							
„ 24.....	115,96	1,62	1,63	3,25							
Mar. 3.....	137,86	1,61	1,64	3,26							
„ 10.....	124,25	1,61	1,64	3,25	Mar. 10...	1,67	3,69	5,37	4,28	3,11	7,39
„ 17.....	107,87	1,61	1,65	3,26							
„ 24.....	147,29	1,63	1,67	3,30							
„ 31.....	72,51	1,68	1,71	3,39							
April 7.....	151,25	1,73	1,77	3,50	April 7...	1,67	3,73	5,40	4,37	3,04	7,41
„ 14.....	107,05	1,74	1,80	3,54							
„ 21.....	144,91	1,74	1,81	3,54							
„ 28.....	98,08	1,73	1,79	3,52							
May 5.....	131,09	1,75	1,79	3,54	May 5...	1,76	3,83	5,59	4,45	2,99	7,43
„ 12.....	105,12	1,77	1,81	3,58							
„ 19.....	125,81	1,76	1,80	3,56							
„ 26.....	97,21	1,71	1,74	3,45							
June 2.....	128,04	1,67	1,71	3,38	June 2...	2,26	4,28	6,53	4,27	2,89	7,16
„ 9.....	107,09	1,65	1,69	3,34							
„ 16.....	90,05	1,63	1,66	3,29							
„ 23.....	133,20	1,62	1,64	3,26							
„ 30.....	85,15	1,62	1,63	3,25	„ 30...	1,96	4,03	5,00	4,03	2,72	6,75
July 7.....	153,40	1,65	1,66	3,31							
„ 14.....	104,22	1,65	1,64	3,29							
„ 21.....	132,92	1,62	1,62	3,24							
„ 28.....	94,79	1,60	1,59	3,20	July 28...	1,82	3,96	5,78	3,87	2,66	6,53
Aug. 4.....	118,73	1,60	1,59	3,19							
„ 11.....	91,95	1,59	1,59	3,18							
„ 18.....	119,53	1,56	1,57	3,13							
„ 25.....	103,15	1,54	1,54	3,08	Aug. 25...	1,78	3,88	5,65	3,76	2,60	6,36
Sept. 1.....	84,93	1,52	1,54	3,06							
„ 8.....	117,93	1,53	1,55	3,09							
„ 15.....	82,02	1,54	1,56	3,10							
„ 22.....	114,06	1,56	1,58	3,14	Sept. 22...	1,79	3,88	5,77	3,67	2,65	6,32
„ 29.....	85,43	1,60	1,62	3,22							
Oct. 6.....	144,74	1,68	1,69	3,38							
„ 13.....	102,74	1,73	1,71	3,43							
„ 20.....	127,52	1,72	1,70	3,42	Oct. 20...	1,84	4,09	5,94	3,97	2,92	6,88
„ 27.....	86,28	1,71	1,70	3,41							
Nov. 3.....	120,58	1,70	1,71	3,41							
„ 10.....	97,72	1,69	1,73	3,42							
„ 17.....	124,98	1,68	1,71	3,39	Nov. 17...	2,08	4,33	6,41	4,29	3,14	7,43
„ 24.....	99,20	1,66	1,70	3,36							
Dec. 1.....	90,84	1,64	1,67	3,32							
„ 8.....	136,33	1,62	1,65	3,27							
„ 15.....	94,31	1,60	1,61	3,21	Dec. 15...	2,15	4,39	6,54	4,10	3,14	7,23
„ 22.....	132,01	1,61	1,63	3,24							
„ 29.....	69,85	1,59	1,61	3,20							

BANK OF ENGLAND.

Pursuant to the Act 7th and 8th Victoria, cap. 32 (1844)

[0,000's omitted.]

1	2	3	4	5	6	7
Issue Department.					Collateral Columns.	
Liabilities.		Assets.				
Notes Issued.	Dates. (Wednesdays.)	Government Debt.	Other Securities.	Gold Coin and Bullion.	Notes in Hands of Public. (Col. 1 minus col. 16.)	Minimum Rates of Discount at Bank of England.
£ Mlns.	1883.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	Per cnt.
35,48	Jan. 3	11,02	4,74	19,73	26,42	(End of 1882) 5
35,63	„ 10	11,02	4,74	19,88	25,89	1883.
36,21	„ 17	11,02	4,74	20,46	25,62	
36,70	„ 24	11,02	4,74	20,95	25,18	25 Jan. 4
37,06	„ 31	11,02	4,74	21,32	25,16	
37,31	Feb. 7	11,02	4,74	21,56	25,19	
37,45	„ 14	11,02	4,74	21,70	25,07	15 Feb. 3½
37,80	„ 21	11,02	4,74	22,06	24,68	
38,01	„ 28	11,02	4,74	22,26	24,84	1 March ... 3
37,77	Mar. 7	11,02	4,74	22,02	24,88	
37,44	„ 14	11,02	4,74	21,69	24,57	
37,40	„ 21	11,02	4,74	21,65	24,77	
37,13	„ 28	11,02	4,74	21,38	25,10	
36,75	April 4	11,02	4,74	21,00	26,01	
36,29	„ 11	11,02	4,74	20,54	25,75	
36,08	„ 18	11,02	4,74	20,33	25,71	
35,98	„ 25	11,02	4,74	20,22	25,62	
35,77	May 2	11,02	4,74	20,02	26,27	
35,26	„ 9	11,02	4,74	19,51	25,99	10 May 4
34,64	„ 16	11,02	4,74	18,89	25,79	
34,90	„ 23	11,02	4,74	19,15	25,47	
35,26	„ 30	11,02	4,74	19,51	25,51	
35,56	June 6	11,02	4,74	19,81	25,63	
36,11	„ 13	11,02	4,74	20,36	25,20	
36,85	„ 20	11,02	4,74	21,10	25,09	
37,21	„ 27	11,02	4,74	21,46	25,47	
37,05	July 4	11,02	4,74	21,30	26,67	
37,01	„ 11	11,02	4,74	21,26	26,35	
37,01	„ 18	11,02	4,74	21,26	26,09	
37,42	„ 25	11,02	4,74	21,67	25,91	
37,84	Aug. 1	11,02	4,74	22,09	26,43	
37,72	„ 8	11,02	4,74	21,97	26,34	
38,14	„ 15	11,02	4,74	22,39	26,17	
38,37	„ 22	11,02	4,74	22,62	25,82	
38,84	„ 29	11,02	4,74	23,09	25,71	
38,90	Sept. 5	11,02	4,74	23,15	25,79	
39,10	„ 12	11,02	4,74	23,35	25,39	13 Sept..... 3½
39,16	„ 19	11,02	4,74	23,41	25,36	
39,35	„ 26	11,02	4,74	23,60	25,27	27 „ ... 3
38,78	Oct. 3	11,02	4,74	23,03	26,61	
38,17	„ 10	11,02	4,74	22,42	26,33	
38,01	„ 17	11,02	4,74	22,27	26,11	
37,49	„ 24	11,02	4,74	21,74	25,58	
37,13	„ 31	11,02	4,74	21,38	25,77	
36,96	Nov. 7	11,02	4,74	21,21	25,69	
36,86	„ 14	11,02	4,74	21,11	25,47	
36,88	„ 21	11,02	4,74	21,13	25,09	
36,89	„ 28	11,02	4,74	21,14	24,81	
36,89	Dec. 5	11,02	4,74	21,14	25,21	
36,90	„ 12	11,02	4,74	21,15	24,83	
37,00	„ 19	11,02	4,74	21,25	24,86	
36,70	„ 26	11,02	4,74	20,95	25,00	

—Weekly Return.

for Wednesday in each Week, during the Year **1883.**

[0,000's omitted.]

8	9	10	11	12	13	14	15	16	17	18
Banking Department.										
Liabilities.						Assets.				
Capital and Rest.		Deposits.		Seven Day and other Bills.	Dates. (Wednesdys.)	Securities.		Reserve.		Totals of Liabilities and Assets.
Capital.	Rest.	Public.	Private.			Government.	Other.	Notes.	Gold and Silver Coin.	
£	£	£	£	£	1883.	£	£	£	£	£
Mlns.	Mlns.	Mlns.	Mlns.	Mlns.		Mlns.	Mlns.	Mlns.	Mlns.	Mlns.
14,55	3,19	6,29	25,93	,22	Jan. 3	11,38	29,12	9,06	,63	50,19
14,55	3,33	4,53	23,04	,20	„ 10	13,78	21,41	9,74	,74	45,67
14,55	3,36	3,61	24,18	,22	„ 17	13,08	21,48	10,59	,79	45,94
14,55	3,37	3,75	23,91	,18	„ 24	12,59	29,80	11,52	,86	45,96
14,55	3,39	4,07	22,29	,19	„ 31	11,89	19,90	11,90	,80	44,49
14,55	3,44	5,79	22,05	,24	Feb. 7	11,88	21,23	12,12	,84	46,07
14,55	3,45	6,80	22,53	,23	„ 14	12,38	21,88	12,38	,91	47,55
14,55	3,49	8,86	22,78	,19	„ 21	12,38	23,45	13,12	,92	49,87
14,55	3,77	9,70	22,81	,17	„ 28	12,38	24,56	13,17	,89	51,00
14,55	3,79	9,42	22,88	,20	Mar. 7	13,14	23,87	12,89	,93	50,83
14,55	3,78	9,87	22,82	,19	„ 14	13,40	23,96	12,87	1,00	51,23
14,55	3,80	10,16	22,94	,20	„ 21	13,36	24,70	12,63	,97	51,66
14,55	3,80	10,85	22,86	,17	„ 28	13,36	25,91	12,03	,94	52,24
14,55	3,80	11,57	22,26	,19	April 4	13,36	27,34	10,74	,94	52,38
14,55	3,08	7,18	23,71	,22	„ 11	14,35	22,90	10,54	,96	48,75
14,55	3,09	7,00	22,98	,20	„ 18	14,34	22,18	10,37	,93	47,82
14,55	3,10	6,85	22,63	,18	„ 25	14,34	21,65	10,36	,96	47,31
14,55	3,10	7,04	23,53	,22	May 2	14,34	23,62	9,50	,99	48,45
14,55	3,11	7,35	23,28	,21	„ 9	14,34	23,87	9,27	1,04	48,52
14,55	3,12	6,70	23,45	,20	„ 16	13,84	24,37	8,85	,97	48,03
14,56	3,13	7,39	22,08	,19	„ 23	13,84	23,09	9,43	,98	47,34
14,55	3,09	7,36	22,92	,16	„ 30	13,84	23,51	9,75	,98	48,08
14,55	3,08	7,73	22,71	,18	June 6	13,84	23,47	9,93	1,01	48,25
14,55	3,09	7,49	22,39	,18	„ 13	13,32	22,45	10,91	1,04	47,72
14,55	3,10	8,64	22,28	,18	„ 20	13,32	22,69	11,76	,99	48,76
14,55	3,10	8,59	22,02	,18	„ 27	13,32	22,40	11,74	,98	48,44
14,55	3,15	8,86	23,21	,20	July 4	12,97	25,66	10,38	,97	49,98
14,55	3,31	4,56	22,76	,22	„ 11	11,97	21,78	10,66	,99	45,40
14,55	3,34	4,47	23,83	,22	„ 18	11,97	22,63	10,92	,90	46,42
14,55	3,34	4,66	23,25	,17	„ 25	11,97	21,59	11,51	,91	45,98
14,55	3,39	4,42	22,99	,20	Aug. 1	11,96	21,33	11,41	,84	45,54
14,55	3,40	4,41	22,39	,20	„ 8	11,96	20,74	11,38	,88	44,96
14,55	3,41	5,00	22,36	,19	„ 15	11,96	20,72	11,97	,85	45,50
14,55	3,43	5,75	22,78	,19	„ 22	11,96	21,33	12,55	,86	46,70
14,55	3,37	5,93	23,16	,18	„ 29	11,96	21,32	13,13	,79	47,20
14,55	3,74	5,45	23,56	,21	Sept. 5	11,96	21,61	13,11	,83	47,51
14,55	3,76	5,87	25,27	,18	„ 12	13,69	21,46	13,71	,77	49,63
14,55	3,78	6,03	25,09	,21	„ 19	13,69	21,35	13,80	,81	49,65
14,55	3,78	6,10	25,05	,18	„ 26	13,69	21,14	14,08	,75	49,66
14,55	3,77	5,90	23,35	,22	Oct. 3	13,69	21,10	12,17	,73	47,69
14,55	3,09	4,14	25,62	,23	„ 10	14,18	20,77	11,84	,84	47,63
14,55	3,09	3,51	25,02	,23	„ 17	13,68	20,14	11,90	,69	47,41
14,55	3,10	3,92	24,81	,20	„ 24	13,68	20,19	11,91	,81	46,59
14,55	3,08	4,46	23,38	,18	„ 31	13,68	19,89	11,36	,72	45,65
14,55	3,09	4,21	23,59	,20	Nov. 7	13,68	19,82	11,27	,87	45,64
14,55	3,10	4,63	24,13	,21	„ 14	14,68	19,57	11,39	,98	46,62
14,55	3,10	5,73	23,87	,19	„ 21	14,99	19,73	11,79	,93	47,44
14,55	3,08	6,31	23,68	,18	„ 28	14,99	19,78	12,08	,96	47,81
14,55	3,06	7,14	22,23	,20	Dec. 5	15,19	19,48	11,68	,81	47,16
14,55	3,07	7,26	22,14	,18	„ 12	14,46	19,76	12,07	,91	47,20
14,55	3,07	8,40	21,56	,18	„ 19	14,46	20,31	12,14	,85	47,76
14,55	3,07	8,98	21,79	,15	„ 26	14,46	21,76	11,70	,62	48,54

FOREIGN EXCHANGES.—*Quotations as under,* LONDON *on Paris, Hamburg, and Calcutta;—and New York, Calcutta, and Hong Kong, on* LONDON, *for* **1883.**

1	2	3	4	5	6	7	8	9
			Calcutta.				Price per Ounce.	
DATES. (Approximately.)	London on Paris. 3 m. d.	London on Hamburg 3 m. d.	London on Calcutta.	Indian Council Bills. Minimum Price Per Rupee.	New York on London. 60 d. s.	Hong Kong on London. 4 m. d.	Gold Bars (Fine).	Standard Silver in Bars.
1883.			*d.*	*d.*	Per cnt.	*d.*		*d.*
Jan. 4	25·52½	20·66	19⅜	19¼	4·80	44⅛	77·9	50
„ 18	25·50	20·64	19⅜	19¼	4·82	44	77·9	50⅛
Feb. 1	25·51¼	20·68	—	19 19/32	4·82¾	—	77·9	50⅜
„ 15	25·51¼	20·66	—	19⅜	4·83	43¾	77·9	50 7/16
Mar. 1	25·48¾	20·65	—	19 17/32	4·81½	44¼	77·9	51
„ 15	25·50	20·66	—	19 1/16	4·80	—	77·9	51 3/16
April 5	25·47½	20·65	—	19 18/32	4·82	44⅛	77·9	50¾
„ 19	25·47½	20·66	—	19 13/32	4·82¾	43⅞	77·10½	50½
May 3	25·45	20·68	—	19 7/16	4·82¾	43	77·10	50⅜
„ 17	25·52½	20·72	—	19 12/32	4·83	43¾	77·10	50 1/16
June 7	25·52½	20·72	—	19 10/32	4·85½	43⅞	77·9	50⅛
„ 21	25·53¾	20·75	—	19 15/32	4·84¾	44⅛	77·9	50⅜
July 5	25·57½	20·74	—	19 15/32	4·84¾	44	77·9	50½
„ 19	25·57½	20·74	—	19 12/32	4·83¾	43⅛	77·9	50 5/16
Aug. 2	25·57½	20·72	—	19 7/16	4·83	43⅞	77·9	50 7/16
„ 16	25·60	20·73	—	19 16/32	4·82¼	44¼	77·9	50½
Sept. 6	25·60	20·71	—	19 17/32	4·81½	44⅜	77·9	50⅝
„ 20	25·57½	20·68	—	19 9/16	4·82	44⅜	77·9	50¾
Oct. 4	25·51¼	20·66	—	19⅝	4·81⅓	44⅝	77·9	50 15/16
„ 18	25·51¼	20·64	—	19 21/32	4·81	44⅝	77·9	51
Nov. 1	25·50	20·62	—	19 9/16	4·80¾	44⅞	77·9½	50⅞
„ 15	25·47½	20·60	—	19½	4·81¼	44⅞	77·9½	50¾
Dec. 6	25·45	20·62	—	19½	4·81½	44¾	77·9	50 13/16
„ 20	25·45	20·63	—	19 7/32	4·81¾	45¼	77·9	50⅞

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The Recent Decline *in the* English Death-Rate *considered in* Connection *with the* Causes *of* Death.

By G. B. Longstaff, M.A., M.B., Oxon., M.R.C.P.

[Read before the Statistical Society, 18th March, 1884. The President, Robert Giffen, Esq., LL.D., in the Chair.]

One of the most striking facts of the day, from the statistician's point of view, is the remarkably low death-rate that has prevailed in this country during the last eight years. From 1838 to 1875 inclusive the death-rate averaged 22·3 per thousand, but during the eight years 1876-83 inclusive, it has averaged only 20·3. The only approach to such a low mortality was in the five years 1841-45, when the death-rate averaged 21·4; so that the recent low rate is both considerably lower and extends over a greater number of years.*

Mr. Noel A. Humphreys in his paper last session proved conclusively that if the English death-rate should continue at the low average of the five years 1876-80, the mean duration of male life in this country would be increased by 2·0 years, and that of female life by no less than 3·4 years as compared with the English Life Table. Moreover, among males 70 *per cent.*, and among females 65 *per cent.* of this increased life would be lived between the ages of 20 and 60 years, or during the most useful period.

At Mr. Humphreys's request I have taken up the question where he left it, and have examined the changes that have taken place in the death-rates at different ages in the two sexes *from various causes of death.* The subject is intricate, surrounded with difficulties, and though entailing considerable labour, is perhaps not productive of adequate results. I have to thank Mr. Humphreys and his colleagues at the General Register Office for help in many ways, but must take upon myself the entire responsibility for the accuracy of the figures put forward, and the conclusions drawn therefrom. The somewhat voluminous tables no doubt contain

* (Forty-fourth Annual Report of the Registrar-General, p. xliii; Quarterly Return of Marriages, &c., No. 140, p. ix.)

errors, but I feel confident that they cannot be of much importance, since the whole of the calculations have been checked, and all unexpected results carefully re-examined. Moreover the calculations have been made by the aid of the Arithmometer of M. Thomas, which, in my hands at any rate, gives more accurate results than logarithmic computation, besides being infinitely less laborious.

As I shall have to deal entirely with the Registrar-General's Returns, it is well that I should say *in limine* that after carefully reading all that has been advanced in recent years against "The "National System of Vital Statistics," I am thoroughly convinced of the soundness of that system and the fallacies inherent in all attacks upon it. Moreover, having studied for several years the figures relating to "Alleged Causes of Death," I have been more and more convinced of the value of those figures, and I fully believe that they may be taken as, on the whole, a fair approximation to the truth. At the same time it is hardly necessary to say that like all other statistics they require care and knowledge in handling. Without doubt the figures relating to alcoholism, venereal diseases, and perhaps insanity, are almost valueless; but that does not prove that those relating to scarlet fever, pneumonia, or cancer are equally valueless. Neither does the fact that a large number of certificates are carelessly filled up, invalidate the yet larger number that are more trustworthy: indeed these very sources of error are subject to laws, and are more or less constant factors of the whole. When it is possible, as I have elsewhere* proved it to be, to find general laws regulating many of the causes of death, and especially mutual relations between these causes, and relations between some of them and various external phenomena, the only possible inference that I can deduce is that the figures dealt with are the expression more or less accurate of facts in nature. The national importance of the subject must be my excuse for this digression.

But in spite of what I have just stated, it must be admitted that there are numerous fallacies to which the classification of deaths according to their alleged causes is liable. They are :—

Firstly, in a number of cases no cause of death is specified at all. In 1847 about 5 *per cent.* of the deaths came under "cause "unspecified," but in 1880 this proportion was reduced to less than 1 *per cent.* (Annual Reports of the Registrar-General.)

Secondly (and this is a much more important source of error), in a larger number of cases the cause is stated in such a vague or indefinite manner as to be almost valueless. The terms atrophy,

* Transactions of the Society of Medical Officers of Health, 1879-80, p. 44; ditto, 1880-81, p. 45. Transactions of the Epidemiological Society of London, vol. iv, p. 421; ditto, New Series, vol. ii, p. 119.

debility, old age, hæmorrhage, dropsy, &c., give but little information, but it is satisfactory to note that, from the commencement of the reports in 1838 to that last issued, the improvement in this respect is steady and continuous. For example very few cases are now returned simply as "dropsy," but the dropsy is referred to disease of the heart, kidneys, liver, or ovaries.

Thirdly, where the cause is definitely assigned there is good reason to believe that in a large number of cases owing to carelessness, ignorance, a desire to spare the feelings of relatives, or even less worthy motives, the causes of death assigned are barely approximately correct. The returns themselves indicate that this source of error is also diminishing.

Fourthly, medical science like most other things is more or less under the dominion of fashion, hence the same disease is at different times given different names. By the aid of a little medical knowledge this can to a large extent be allowed for.

Before entering into fuller detail it will be convenient, without taking into account sex and age, to ascertain what alleged causes of death appear to be growing more and more potent, and what on the other hand are less and less frequently assigned.

For this purpose we may utilise Table XXXIV in the Registrar-General's Forty-third Annual Report. In this are given the mean annual rates of mortality for each period of five years from 1850-79. From it the following table is constructed :—

TABLE A.—*Rise or Fall in the Death Rates per* 1,000,000 *Persons Living in England and Wales, from Various Causes or Groups of Causes. Averages of Quinquennium* 1875-79, *compared with Averages of Quinquennium* 1850-54.

Risen per 1,000,000 Living.		Fallen per 1,000,000 Living.	
Lung diseases	1,213	Phthisis	694
Heart ,,	696	Developmental diseases	617
Brain diseases, excluding convulsions	377	Fever	569
Kidney diseases	229	Dropsy	405
Cancer	191	Convulsions	342
Liver diseases	76	Cholera	287
Diphtheria and croup	69	Small pox	197
Tabes mesenterica	65	Scarlet fever	173
Whooping cough	45	Diseases of stomach and intestines	112
Rheumatism	45	Hydrocephalus or tubercular meningitis	111
Other causes	196	Sudden death—cause unascertained	101
		Diarrhœa	85
		Measles	64
		Other causes	494
Total rise	3,202	Total fall	4,251
Balance, fall	1,049		
	4,251		

This table suggests several remarks. In the first place it will be noticed that six so-called "zymotic diseases," viz., fever, cholera, small pox, scarlet fever, diarrhœa, and measles, between them contribute a fall of 1,375 deaths per million, against which there is a set off of 114, being the rise under the heads of diphtheria, croup, and whooping cough, leaving a net fall of 1,261 deaths per million from the principal zymotic diseases. But as the total fall from all causes is 1,049, it is evident that the deaths from non-zymotic diseases must have *risen* 212 per million.

The increased mortality from lung diseases is remarkable. It will be shown in the sequel that this is not to be explained by the fall in phthisis, even were that fall large enough to explain it. Doubtless, however, some of the cases (but not very many) now classed under bronchitis would have been attributed to phthisis thirty years ago; also some cases formerly attributed to old age alone are now more properly classed under diseases of lungs, brain, or kidneys. Among the diseases of the nervous system there is a fall under the vague term "convulsions" in the first few years of life, nearly as great as the rise under the other members of the group at later ages.

Now it is obvious that errors due to all the four causes mentioned above, and more especially errors due to changes in nomenclature and classification, will be minimised by comparing two periods as near together as possible, and for my present purpose it is convenient to take the periods 1861-70 and 1876-80. The facts for the first period are at once available in Tables 2 and 3 of the Supplement to the Thirty-fifth Annual Report of the Registrar-General, which give the death-rates for males and females separately, from all causes, and twenty-five separate causes, at twelve groups of ages. My tables differ from these in the following respects:—

(1.) The rates are per 100,000 living at each age, instead of per million, as I believed that the essential features would be rendered somewhat more clearly by the use of fewer figures.

(2.) I group all ages above 75 together, since the returns of ages of very old people are untrustworthy, and the numbers are small.

(3.) In place of twenty-five causes or groups of causes I have only used fifteen. This was done mainly to save labour, but partly because some of the causes given by the Registrar-General, such as "diseases of the skin," were unimportant for my purpose. If it had been practicable without very great labour, I should have preferred to separate "convulsions" from other brain diseases, and liver diseases from those of the stomach.

With the figures so obtained I have compared like rates for the

five years 1876-80. These rates were laboriously calculated from the number of deaths given in each annual report, which had to be cast and the average taken. At first I had wished to take advantage of the 1881 report, issued since Mr. Humphreys's paper, but decided not to do so, for it seemed best to consider the same years as he did; moreover, the classification of causes of death was altered in 1881 in such a way that I found the labour greatly increased when I began by including that year.

Tables I—IV form a double set, Ia, IIa, &c., relating to males, Ib, IIb, &c., to females. All four tables relate to the same facts, namely, the average annual number of deaths in England and Wales from certain causes at certain ages. The italic type refers to the ten years 1861-70, and the roman type to the five years 1876-80.

Tables Ia and Ib give *the actual average deaths.*

Tables IIa and IIb give *the death-rates per* 100,000 *living at each age.*

Tables IIIa and IIIb give *the percentage rise or fall of the death-rates in the second period as compared with the first.*

Tables IVa and IVb give *the gain or loss in lives per annum consequent on such fall or rise in the death-rate.**

By the use of the four tables together it is hoped that the real importance or otherwise of the fluctuations will be shown. An example will make my meaning clear. Among females over 75 years of age the death-rate from diphtheria fell 40 *per cent.*: the consequent gain was only one life *per annum.* Among females between 45 and 55 years of age the mortality from lung diseases rose 5 *per cent.*: the consequent loss of lives amounted to 126 *per annum.*

In the examination of these tables it will be convenient to consider those causes of death first which Table A shows to have been long decreasing in fatality, and subsequently those which appear to have increased.

Phthisis, or pulmonary consumption, is very fatal at all ages from 15 to 75, but most so between 20 and 55; at ages 5—20 it is more fatal to females than to males, after 45 it is more fatal to men. The death-rate has declined at every age with some insignificant exceptions in both sexes: the decline being for males 14, for

* Tables Ia and Ib are derived from the Supplement to the Thirty-fifth Annual Report of the Registrar-General, p. 2, and from the Annual Reports for 1876-80, pp. 146 *et seq.* in each report. Tables IIa and IIb are derived in part from Tables 2 and 3 in the Supplement to the Thirty-fifth Annual Report, in part are calculated from Tables Ia and Ib by the aid of the populations at each age given in the census, from which mean populations for the period in question were calculated. Tables IIIa and IIIb, IVa and IVb are derived from the preceding tables by calculation.

females 22 *per cent.* For both sexes the decline was greatest (28 *per cent.*) between the ages of 15 and 20, when deaths may be considered, in an economic sense, the greatest loss, since the individual of that age has been supported by society for a great number of years, but has as yet done but little in return. The decline has been not much less considerable among both males and females at all other ages below 25, varying from 18 to 26 *per cent.* The mortality of males above 35 has diminished very little, but that of females has fallen between 14 and 24 *per cent.* until the age of 75, after which there is a trifling rise. The lives saved amounted to 3,966 males, 6,806 females; not less than 2,885 of the former and 4,233 of the latter were of ages 15—35, that is say were among the most useful of the community. The question has often been considered as to how this well known fall in the mortality from phthisis is due to "medical fashion," that is, how far it may be a mere question of classification, since it is equally well known that the mortality assigned to the diseases of the respiratory organs (principally bronchitis) is increasing. Now there are two answers to this question. Firstly, it would appear that the discovery of the so-called *bacillus of tubercle* would confirm the opinions of the older writers that phthisis is a distinct disease *sui generis*, with many forms of manifestation, and not an ill-assorted mixture of unrecognised diseases as has been more lately taught. Secondly, there is an argument that is more in place here: the mortality from phthisis is shown by the table to have diminished at the ages 5—35 to an extent varying from 15 to 28 *per cent.*, whereas *at all these ages the mortality from diseases of the lungs remained comparatively stationary.* This is especially well seen in Tables IVA and IVB. I have elsewhere ["Transactions of the Epidemiological "Society of London," N.S., vol. ii, p. 119] shown other reasons for believing that substantially the diagnosis of phthisis from bronchitis corresponds with nature. We must therefore credit medicine, whether preventive, curative, or both, with another triumph here; and let it be remembered that this triumph means saving many lives when they are most valuable. There is still ample material to work upon, plenty of room for further improvement.

Developmental diseases come next in the list of those that have decreased in fatality during the last three years. In the tables these fall under class "all other causes." The most important of these are "atrophy and debility," which relate almost entirely to young infants, and "old age," which explains itself. "*All other* "*causes*" account for about one-third of the deaths of children under 5, about half the deaths over 75 years. The death-rate has fallen 11 *per cent.* for males and 13 *per cent.* for females, and

the fall has taken place at every age of both sexes; this fall is tolerably even throughout, at least it does not exhibit the marked preference for the two extremities of life which might have been expected. The "lives saved" number 8,425 males, 9,837 females; of these numbers 4,346 males and 4,372 females are in the first five years of life, and may be fairly attributed to the better management of children and improved sanitary surroundings, which have diminished the deaths under the vague headings "teething," "atrophy," and the like. Of the rest 2,431 males and 3,586 female lives saved are at ages over 65, at which period there is a large increase of deaths from "local diseases" as they are called. Diagnosis is now more accurate, and certificates are more carefully filled up, hence fewer deaths are attributed to "old age."

"*Fever*" comprises typhoid or enteric fever, now the most important by far; typhus fever, which is still prevalent to some extent in Ireland, and lingers in the Irish quarters of Glasgow, Edinburgh, and Liverpool; and some less defined diseases numerically not very important. *Fever* kills males and females about equally, and at all ages, the two extremes of life suffering somewhat more severely. The percentage fall in the death-rate is very remarkable, being no less than 57 *per cent.* for each sex, the fall being spread over all ages, though old people gain most; the number of "lives "saved" is no less than 6,188 males and 6,510 females yearly; the salvage being greatest under 5 years of age, but very considerable at each age below 75. It seems impossible to dissociate this great saving of life from the operations of the public health Acts, and more especially the indirect results of this as shown in the proceedings of the Sanitary Institute, the exhibitions of sanitary appliances under various auspices, and other proofs that public attention has been drawn to these matters. The fall in the death-rate from fever is without doubt the great triumph of the sanitary reformers. Typhus has been driven out from place after place by measures taken to check overcrowding and want of ventilation (which *have* been to a great extent successful, although the pamphlet literature of the past autumn has no doubt caused a general impression to the contrary), until it now only lingers in the lowest quarters of a few large towns. Things are not perfect yet, far from it, but they were once much worse, and that not so long ago. On the other hand measures directed to improve drainage and water supply have been most successful in restraining enteric fever within comparatively narrow limits.

Dropsy. All that need be said about this is that in 1850 9,981, or 2·8 *per cent.*, of the total deaths had this cause assigned, whereas in 1880 only 3,192, or 0·6 *per cent.*, of the total deaths were so classed. This does not mean that fewer persons die of dropsy than then, but

that the dropsy itself is now more commonly attributed to its proximate cause, disease of the heart, kidneys, liver, or ovaries, or cancer. In the tables dropsy is included under "Heart diseases," but it has now ceased to play such an important part among the assigned causes of death as seriously to affect the correctness of the returns.

Convulsions are included in the tables under brain diseases.

Scarlet fever has diminished notably, but from its usually occurring in epidemics, which are possibly influenced by meteorological conditions, it is not safe to draw conclusions as to the future. It is of course a disease of childhood, most of its victims falling before the age of puberty.

In both *small pox* and *diphtheria* there has been saving of life, but these diseases now cause such small mortality that their total extinction would only reduce the general death-rate by 0·2 per 1,000.

The *diarrhœa* figures are confused by the occurrence of the epidemic of Asiatic cholera in 1866. Diarrhœa kills mostly at the extremities of life, cholera has not this marked preference. This explains the fact that under *diarrhœal diseases* the fall of the death-rate is greatest from 5—75. There is room for great improvement under this head.

The mortality from *measles* has diminished notably, but *whooping cough* has been stationary. Whooping cough is much more fatal to girls than to boys. Measles causes nearly five times, and whooping cough nearly six times as many deaths as small pox, while the amount of mischief to be attributed to these little-thought-of ailments in the way of impaired general health, permanent lung disease, and even blindness and deafness, will probably never be known. It would appear that as yet preventive medicine has failed to control these diseases; can this be because the people will not co-operate to put down diseases which only affect young children?

Turning now to the other side of the account, first in importance come *lung diseases*. Like diseases of the brain, and in contrast with phthisis, they are most fatal in the first five years of life and after 45. Again, lung diseases are 21 *per cent.* more fatal to males than to females, but this difference does not apply to the ages 5—20, as boys do not appear to suffer more than girls. In the case of phthisis it may be remembered the mortality of females from 5—20 exceeds that of males at the same ages. Lung diseases have increased in the period under consideration, among males 13, among females 14 *per cent.*; the increase being mainly in the first five years of life and after 35. There is a slight fall among boys of 10—15, a more marked fall among girls and young women from

10—25. The annual "loss of lives" from these diseases amounts to 6,490 males and 5,404 females; of these 3,486 males and 2,557 females were under 5 years old, while 2,919 males and 2,952 females were aged 35 years and upwards. The extra deaths among women of 65 years of age and upwards amounted to 2,267 against 1,544 among males of like ages. Doubtless at both extremes of life there has been a transference from such assigned causes as "atrophy" and "old age," or "debility of age," to bronchitis and other diseases of the lungs.

Heart Diseases and Dropsy.—It is necessary to take these together, since Dr. Farr did so in the table which I have adopted as my standard. In the first period dropsy made up 25 *per cent.* of the whole, in the second period only 10 *per cent.* But as in a large proportion of the cases (Dr. Havilland put it at three-fifths of the whole number) the dropsy was certainly caused by heart disease, the error due to grouping the two together is not important. Females suffer from heart disease somewhat more than males, but in both cases the death-rate is much higher after 35 than before. The mortality of males has increased 14 *per cent.*, of females only 11. In both cases there has been a notable fall at the earlier ages, but a considerable increase, greatest in males, after the age of 35. Whereas 344 male and 242 female lives have been saved before the age of 20, at all ages over 20 no less than 2,909 male lives and 2,363 female lives have been lost annually in the latter as compared with the former period in the tables. Corresponding with this increase is an increase (not shown in the tables) in deaths from rheumatic fever, which is a most fruitful cause of heart disease.

Brain Diseases.—These affect males considerably (21 *per cent.*) more than females; they are most fatal at the extremes of life. The mortality at all ages has not materially altered, but it is very different when the separate ages are considered. In the first five years the male death-rate has fallen 13 *per cent.*, the female 15 *per cent.* This we know from other sources* to be very largely due to the fall in "convulsions." In contrast with this at all ages over 35 there is a rise among both males and females of from 5 to 22 *per cent.* On one hand 2,443 male children and 2,227 female children that would have died annually from diseases of the nervous system under the death-rate prevailing in 1861-70, now survive under the rates prevailing in 1876-80; but on the other hand at ages over 35 no less than 2,098 males and 2,078 females now die that would have survived, or died of some other cause under the former *régime*.

Kidney diseases are in both sexes most fatal in middle and

* "Forty-fourth Annual Report of Registrar-General," Table 33.

advanced life; they are about twice as fatal to men as to women. Female mortality has, however, increased nearly twice as much under this head as male, although the increase is very great in all cases, varying from 20 to 81 *per cent.* The total loss of life from renal disease amounts to 1,702 males and 1,417 females, mainly in middle and advanced life.

Cancer, in contrast to renal disease, is twice as fatal to women as to men; it is rare in early life, but steadily increases in frequency from the age of 25 upwards. Cancer has increased 38 *per cent.* in males, 24 *per cent.* in females, the greater increase in males being probably due to the fact that cancer of the stomach and liver, which is commoner in men than women, is much more difficult of diagnosis than cancer of the female breast or of the uterus. Hence improved medical skill affects the returns for it more. The loss of life due to the increased mortality from cancer amounts to 1,187 males and 1,661 females, of which seven-eighths are above the age of 45. A recent writer* said he was convinced that the long continued and steady increase of cancer was not apparent only, and accounted for by increased accuracy of diagnosis and registration, but was an undoubted fact; the cause is quite unknown, but must probably be sought in some abnormal circumstances of our artificial existence. It should be remembered that very few, if indeed any, recover from this much dreaded disease, and also that it chiefly attacks after the reproductive age is past. From these facts we may draw the consolation that if there are many killed, there are no wounded, and that although the *tendency* to cancer may be handed down to offspring, they are not born enfeebled in consequence of their parents' ailment.

As regards the other diseases in the tables, I will only remark that with trifling exceptions there is more or less gain of life under each division of each zymotic disease; also that the increased number of deaths from violence at the higher ages, accompanying a diminished death-rate at the lower ages, is a curious fact that is difficult to explain.

To make the various relations and changes above indicated more striking, I have constructed the summary Tables VA, VB, VIA, VIB, VII and VIII;† showing the same facts as Tables I—IV, but for three groups of ages only. First, all under 20 years of age, or the dependent period of childhood and youth; second, active working life, the productive period, from 20 to 65; and third, the dependent period of old age, after 65 years. Mr. Humphreys in his corresponding period drew the line at 60 years; I could not have followed him exactly without great trouble, for reasons explained earlier.

* H. P. Dunn, F.R.C.S., in "British Medical Journal," 1883, pp. 708, &c.

† These tables are all obtained from the preceding tables by calculation.

These short tables show firstly, that in both sexes the death-rates from "all causes" below 20 had decreased considerably, between 20 and 65 they had also decreased, but much less, whereas over 65 there was a very small increase.

Secondly, the rates of decrease were largest among females, whereas the increase was largest among males.

Thirdly, the most marked increase in the death-rates from the several causes was from diseases of the kidneys, more especially among females, and next from cancer in men. So that it would appear there is a tendency for the mortality of the two sexes from these causes to approximate. It is possible that increased drinking among women may account for some of this increased fatality from kidney diseases.

Fourthly, the great decrease of mortality from fever at all ages is shown in a very striking manner.

Fifthly, Table VIII shows conclusively that increased precision in diagnosis and care in registration will not account for *all* the increased deaths from diseases of the lungs, brain, heart, &c., since the increase under these heads greatly exceeds the decrease under "all other causes." The same tables show in an equally striking manner that "phthisis" and "lung diseases" in the reports indicate in the main at any rate essentially different causes of death, since the fluctuations are in no way reciprocal.

After this analysis it is possible to consider the bearing of the facts ascertained on the following problems.

Supposing that the last twenty years may be taken as a fair index of what we are to expect in the future, *i.e.*, that those causes of death which have increased in fatality will continue to do so, or remain stationary; and conversely, those which have decreased in fatality will either become stationary or continue to decrease—what will be the effect on—

(1.) The duration of life?

(2.) The sex and age distribution of the population?

And (3.) The rate of increase of the population? In the last case the question of emigration will have to be considered.

(1.) Mr. Humphreys's paper, although appearing to do so, did not give a *complete* solution of the first problem, at least as far as a forecast of the future is considered.

It is well known to all statisticians that if an aggregate variable be made up of several component variables, which latter vary at different rates and in different directions, then, given two terms of a series, it is possible to get a nearer approximation to subsequent terms by calculating from the known variations of the components, than from the known variations of the aggregate. For example, a town is composed of, say, six wards; the population of the town

at the present time may be calculated (as it usually is) from the known aggregate increase in the interval between the last two censuses. But a different number, and one almost certainly nearer to the truth, will be obtained if the increase (or decrease) of each ward be calculated in like manner, and the results added together. The same holds good with death-rates; the gross death-rate of either sex at a particular age is made up of a number of death-rates from different causes, some of which are falling, others rising, while others are stationary. It is therefore a point of special importance to remember that whereas a diminishing death-rate *can only fall to zero*, an increasing death-rate may conceivably *rise indefinitely*. This is well illustrated by the cases of fever and kidney diseases. In the aggregate no less than 12,698 fewer persons (in proportion to population) died from fever annually during 1876-80 than during the period 1861-70. But as the number of annual deaths is now but 9,576, an equal further saving of life is no longer possible. On the other hand, there is no such obstacle to the mortality from kidney diseases rising again by 3,000, or indeed by 30,000 *per annum*. It is important therefore in "looking ahead" to remember that great saving of life can only be accomplished where there is now heavy loss of life. If small pox were extinguished to-morrow the result would be trifling compared to a fall of 50 *per cent.* in the mortality from whooping cough, or a fall of only 10 *per cent.* in lung diseases.

In the period under consideration the greatest gain of life has been under "all other causes," fever, phthisis, scarlet fever, and diarrhœal diseases; under all these headings there still remains a considerable margin for profit, although this is getting narrowed in the case of fever. Scarlet fever practically is confined to the young; phthisis has special incidence on youth and early working life, and is of all diseases that which is most destructive to the most valuable lives; fever attacks those of all ages, but it is more fatal at the early ages than phthisis; "all other causes" account for many deaths of both young and old. With the exception of the last, a continued diminution of deaths from any of these causes would tend to increase the duration of active life; in the case of "all other causes" a great portion of the saving would only mean some prolongation of old age, which, as it would almost certainly be accompanied with increased vigour of the survivors, would be a benefit only in a degree less.

On the other side of the account we have diseases of the lungs, heart, and kidneys, and cancer. The three last exact most victims in middle and late life, the lives cut off by them are therefore less valuable than those that fall to phthisis; lung diseases are extremely fatal to the young as well as to the old, so

that they have a point of resemblance to the zymotic diseases. If all these diseases should continue to increase in fatality in like manner, the result on the duration of life would be in the case of the first three to cut short its later years, in the case of diseases of the lungs to cut it short at both ends.

On the whole, balancing these results, we may safely say that if the individual causes of death alter in fatality in the future as they have done in the recent past, for a time the duration of life may continue to increase, but ultimately the tendency would be for more people to survive the dangers of childhood and adolescence, but fewer to reach old age. Useful life would not be greatly shortened, and as the proportion of persons of the reproductive age would be increased, the birth-rate would also be increased.

(2.) The "Report of the Census of 1881" (pp. 22 and 23) calls especial attention to the importance of taking into consideration the constitution of a population as regards sex and age, before comparing its death-rate with that of another population. In illustration, the sex and age constitution of the urban and rural sanitary districts are contrasted, and it is remarked "if we take "the mean (1871-80) death-rates in England and Wales at each "age-period as a standard, the death-rate in an urban population, "as constituted above, would be 20·40 per 1,000, while the death-"rate in the rural population would be 22·83. Such would be "their respective death-rates on the hypothesis that the urban "districts and the rural districts were equally healthy. We know, "however, as a matter of fact, that the urban death-rates instead "of being lower than rural death-rates are much higher. The "difference of healthiness therefore between the two is much "greater than the difference between their death-rates." This is a most important passage, and expresses a truth not generally known, and when known not sufficiently dwelt upon. As the work of calculating thus the "normal" death-rate of a population is somewhat laborious, it would, I think, be of great service to medical officers of health and others, if the Registrar-General's Department would publish a table of factors by which the death-rates of the principal towns ascertained in the ordinary way could be reduced to the normal (*e.g.*, in the circumstances given, the rural factor would be ·959097, the urban factor 1·073343). The age and sex constitution of the population of England and Wales has changed, though not to a very great extent. It would be interesting to know what influence these small changes have in themselves had upon the death-rate and birth-rate.

Any one approaching the subject on *à priori* lines might well maintain that the agglomeration of human beings in towns affects a constantly increasing fraction of the people, and therefore since

life in towns is necessarily less healthy than life in the country, the tendency will be for the death-rate to rise. The first proposition is undoubtedly true: the town population in 1851 was but 51 *per cent.* of the whole, it is now 59 *per cent.*, the increase has been and appears likely to be continuous.* The second premise has appeared to be true hitherto, but nevertheless the conclusion has not followed. The explanation would appear to be that the increased attention paid to hygienic matters by the individual, the corporation, and the State, has more than counterbalanced the evils attendant upon density of population. This must not, however, be pushed too far; the "sanitary" surroundings of many town populations are now superior to those of country populations, but yet the death-rates of these populations remain higher than those prevalent in the country; whereas the above extract from the last census clearly shows that owing to peculiarities of age and sex constitution they should be *lower*. The increased mortality from cancer and several of the "local diseases," the increase in lunacy (though this is not so great as it appears), the deterioration of eyesight, the unquestioned premature decay of the teeth of the rising generation, and to a much smaller extent the prevalence of premature baldness, convince me that the *à priori* argument is a sound one. There are conditions attendant on life in towns which no hygienic knowledge, no improved administration, not even a new municipal government for London, can wholly overcome. Some amount of degeneration of race appears inevitable, and in the United States of America, where all sociological phenomena are seen in more rapid evolution than here, it is said to be even already very evident. This seems to be a fitting place to meet an objection that will be brought forward by many—they will say: "One thing is plain, no "sanitary improvements, no amelioration of habits, will enable men "and women to live for ever. The increased mortality from local "diseases towards the end of life is the inevitable correlative to the "diminished mortality in infancy." There is a fallacy of *time* inherent in this objection. The total period in review from the first year to the last only extends over twenty years, while the average interval, from the middle year of the first period to the middle year of the second is only twelve and a half years. The recent fall in the death-rate of children under 10 did not begin until the year 1867,† so that but few of the extra survivors could have attained their majority by the middle of the second period, far less could they have added some thousands annually to the deaths of persons aged 65 and upwards. Our records do not go back

* Calculated from a table in "Report on Census, 1881," p. 9.

† "Forty-fourth Annual Report of Registrar-General," pp. lxv and lxvi.

further than 1838. We know that during the five years 1841-45* low mortality prevailed at ages over 25, and during the first five years of life. The younger adults of those days, if now surviving, would be old men to-day; the children then under 5 would by our second period be aged 35—40. The recent census shows it is true a slight excess of females at ages 35—45, but males are a trifle in defect. But all this would prove nothing unless we assume, as it is perhaps reasonable, that the extra survivors are more delicate than the average, for *the death-rates per thousand living have increased at the later ages.* But any way this increase is small compared with what we have gained at other ages, so that the balance in our favour remains large.

Table IX† shows for childhood, working life, and old age, the relative incidence of the various causes of death upon males and females. This table read together with Tables VIIA and VIIB shows which sex gains most by each change in the death-rate. Thus in childhood and youth young girls suffer especially (as compared with boys) from phthisis, whooping cough, diphtheria, fever, and heart disease, and all these have diminished in fatality. On the other hand, boys suffer especially (as compared with girls) from violence, kidney diseases, brain diseases, "all other causes," lung diseases, and to a less degree from diarrhœal diseases, small pox, measles, and scarlatina. Of these, lung and kidney diseases are increasing in fatality, the rest are declining, the net results being that girls gain more than boys in the proportion of 7 to 6. During working life from cancer alone do women lose more than men, but here the loss is more than double, and cancer is increasing rapidly; men on the other hand suffer more especially from violence (5 to 1), kidney diseases, lung diseases, phthisis, brain diseases, and fever. Of these, diseases of the kidneys, lungs, and brain are all increasing, the others are diminishing, but the net result shows that females gain more than males in the proportion of 7 to 3. In old age women again suffer from cancer more than men, and cancer is increasing in fatality, but on the other hand old men suffer excessively from kidney diseases (3 to 1), violence, phthisis, small pox, and fever; of these, all except phthisis and fever are increasing. In the net result the mortality of both old men and old women is increasing, but the death-rate of old men three times as fast as that of old women.

It is quite plain that the recent fall in the death-rate favours the accumulation of surplus women, if one may be allowed such an expression, and should the change of mortality go on in the same direction the rate of accumulation will be increased. Several other

* "Forty-fourth Annual Report of Registrar-General," pp. lxv and lxvi.

† Calculated from the other tables.

factors are working in the same direction. (*a.*) Forty years ago for every 100 female children, 104·8 male children were born, but now the number is only 103·9.* (*b.*) Emigration always removes an excess of males; thus during the six years 1877-82 no less than 349,666 adult Englishmen left this country, but they were accompanied by only 179,869 adult Englishwomen, so that the men were 169,797 in excess, or nearly 2 to 1. Emigration is however to a great extent balanced by immigration. In the ten years between the two last censuses the result of migration amounted to a loss to this country of 123,467 males and 40,840 females, the excess of males being 82,627.† (*c.*) Independently of recent changes women live longer than men.‡

The combined result of the operation of all these factors is less than might have been expected. In 1851 there were in this country 104·2 females to every 100 males. This proportion has risen gradually till it now amounts to 105·5 to 100.§

As this excess of women is a common topic of conversation, I have drawn up in the interest of the ladies the following table, based on a longer table in the census report, vol. iii, p. v:—

TABLE B.—*Showing Excess of Males or Females at Different Groups of Ages, together with their Conjugal Condition.*

Ages and Condition.	Males.		Females.	
	Numbers.	*Excess.*	Numbers.	*Excess.*
Children under 15	4,728,466	—	4,740,125	*11,659*
Unmarried 15—35	2,704,062	*72,629*	2,631,433	—
„ 35—45	195,427	—	233,820	*38,393*
„ 45—	200,255	—	292,151	*91,896*
Married 15—35	1,469,040	—	1,778,237	*309,197*
„ 35—	2,907,858	*248,133*	2,659,725	—
Widowed, all ages	434,794	—	999,046	*564,252*
Total	12,639,902	*320,762*	13,334,537	*1,015,397*
Balance, excess of females	—	*694,635*	—	—

The discrepancy between married men and women, some 60,000 more married women than men being returned, admits of ready explanation. Many men at sea, in the army in different parts of

* "Forty-fourth Annual Report of the Registrar-General," p. liv.

† "Board of Trade Return on Emigration and Immigration for 1882." Also "Report on Census, 1881," p. 15.

‡ English Life Table.

§ "Report on Census, 1881," p. 15.

the world, in the colonies, or travelling, had left wives at home. Some few men who had really been married no doubt found it convenient to return themselves as unmarried; probably a considerably larger number of women did the reverse. Taking no account of these, the table shows that the total excess of females, amounting to close upon 700,000, comprises 564,252 widows, a simply appalling number whether viewed from a sentimental or an economic standpoint. But this is only the excess of widows over widowers. The total number of widows is very little short of a million! (999,046). The "really old maids" number only 292,151, or 91,896 more than the old bachelors; there remain 233,820 who may be termed "rather old maids." The 11,659 female children in excess to some extent correspond to the 72,629 young men in excess, since women marry earlier than men.

(3.) There remains for consideration the effect of the present or future decline of the death-rate upon the increase of the population. But little need be said on this head. It is obvious that if fewer die, more will survive, and *pro tanto* the population will be increased. But there is more in it than this. Clearly, everything depends upon the ages at death. It is possible to conceive two populations with equal *general* death-rates, but increasing at very different rates. If the mortality falls chiefly on the earlier ages, while those who reach maturity live on to a ripe old age, a slowly increasing population will result. On the other hand, if there be a high birth-rate, accompanied with high death-rates in middle and late life, the population will increase much more rapidly. The birth-rate must mainly depend upon the proportion of the population living between the ages of 20 and 40. Now this is what all the figures show, death-rates in early life falling, in late life rising; so that the population is increased in two ways, directly, by the diminution of deaths, indirectly, by the proportionate increase of births; or perhaps it would be more correct to say "breeding "capacity," since the birth-rate is largely influenced by the marriage-rate, which in its turn is affected by commerce. It should, however, be borne in mind that emigration, just now very active, by removing chiefly those of the breeding age, and to a less degree by increasing the disproportion of the sexes, tends to counteract this rise in the birth-rate, so that emigration checks population in two ways.

The chief inferences which I think may be fairly drawn from the facts under review, are:—

(1.) The decline of the death-rate in recent years is chiefly to be attributed to a diminished number of deaths assigned to fever and phthisis, and, to a somewhat less degree, to scarlet fever, diarrhœal diseases, small pox, diphtheria, and measles.

(2.) There is also a great diminution under the heading "all

"other diseases," but this is largely to be explained by greater precision in filling in certificates of the cause of death, which partly accounts for the increase under certain other causes.

(3.) There has been coincidently with a fall in the general death-rate a considerable increase under certain causes of death, notably diseases of the lungs, heart, kidneys, and cancer.

(4.) The figures prove that only a portion of the increase noted under the above headings can be explained by improvement in the returns. There has been a real, not merely an apparent increase. More especially the increase under lung diseases will not explain the fall under phthisis.

(5.) The gain under phthisis is more important than the loss under cancer, kidney diseases, and some others, since the lives saved are more valuable than those lost, also in the case of phthisis parents beget children when far advanced in disease, a fact greatly to be regretted.

(6.) Preventive medicine should be especially directed against those diseases which kill the largest numbers, such as "local "diseases" generally, the ill defined diseases of infancy and phthisis; while among the zymotic diseases, diarrhœa and scarlet fever, whooping cough and measles, are more important than diphtheria and small pox.

(7.) Since the falling causes of death *can* only fall to zero, but the rising causes *may* rise indefinitely, the present changes may in course of time lead to a rise in the general death-rate.

(8.) The tendency appears to be for useful working life to be increased, but for old age to be slowly shortened.

(9.) The increased mortality in the latter years of life, and such phenomena as the increase of defective sight and rapid deterioration of the teeth, probably result from the increasing proportion of the population living under the artificial conditions of town life.

(10.) The present increased mortality at the higher ages cannot possibly be explained by the *recent* diminished mortality at the beginning of life, even on the supposition that the survivors are more delicate.

(11.) The changes that are taking place in the incidence of mortality, almost all aid the other causes which contribute to the great superabundance of women in England and Wales.

(12.) They also tend to increase population both by diminution of deaths, and increase, positively and relatively, of births.

In conclusion, if I have made mistakes in my figures, or if I have been over-ready in connecting cause and effect, I must ask you to make allowance for the complexity of a problem which is bound up with so many of the infinite relations of civilised life, an equation in which the number of unknown quantities is itself unknown.

TABLE IIIA.*—*England and Wales.* MALES. *Percentage Fall or Rise in the Death-Rates from Various Causes at Eleven Groups of Ages, Average of the Five Years* 1876-80, *compared with Average of the Ten Years* 1861-70.

	All Ages.	0—	5—	10—	15—	20—	25—	35—	45—	55—	65—	75—
Small pox	*−49*	−73	−47	− 9	−23	−30	−16	−14	−12	−35	−39	− 3
Measles	*−12*	−12	−14	− 8	−33	....	....	....	....	....	....	....
Scarlet fever	*−30*	−29	−31	−40	−38	−40	−34	− 9	....	....	....	....
Diphtheria	*−34*	−39	−22	−28	−53	−51	−50	−25	−36	−37	−39	−75
Fever	*−57*	−59	−56	−50	−47	−43	−49	−60	−63	−69	−71	−71
Whooping cough	*+ 1*	+ 1	− 2	....	....	....	....	....	....	..	....	....
Diarrhœal diseases	*−20*	−12	−63	−77	−74	−73	−71	−60	−53	−41	−32	−18
Phthisis	*−14*	−23	−20	−23	−28	−26	−15	− 4	....	− 5	− 5	− 7
Lung diseases	*+13*	+17	+ 2	− 3	+ 3	− 1	+ 5	+14	+14	+10	+11	+24
Brain „	*− 2*	−13	+ 4	+ 1	− 5	−14	− 6	+ 5	+ 9	+16	+16	+22
Heart diseases and dropsy	*+14*	−30	−30	−11	....	+ 3	....	+28	+22	+22	+21	+26
Kidney diseases	*+32*	+68	+48	+23	+20	+23	+27	+33	+40	+40	+30	+25
Cancer	*+38*	....	....	....	....	....	+18	+25	+38	+43	+52	+44
Violence	*− 8*	−10	−16	−27	−17	−13	− 9	− 6	+ 2	+ 4	+10	+19
All other causes	*−11*	−10	−12	− 9	− 8	−12	−11	− 9	− 6	− 9	−16	−10
All causes	*− 7*	− 9	−23	−23	−22	−21	−12	− 1	+ 3	+ 5	+ 4	+ 4

TABLE IIIB.—*England and Wales.* FEMALES. *Percentage Fall or Rise in the Death-Rates from Various Causes at Eleven Groups of Ages, Average of Five Years* 1876-80, *compared with Average of Ten Years* 1861-70.

	All Ages.	0—	5—	10—	15—	20—	25—	35—	45—	55—	65—	75—
Small pox	*−50*	−74	−51	− 5	−15	− 1	− 7	+14	+ 6	− 4	−13	−12
Measles	*−14*	−14	−11	−28	−31	−30	−11	....	....	....	....	....
Scarlet fever	*−31*	−29	−33	−48	−45	−41	−30	−21	....	....	....	....
Diphtheria	*−34*	−39	−26	−37	−39	−44	−39	−18	−50	−32	−14	−40
Fever	*−57*	−61	−55	−50	−49	−50	−49	−61	−65	−69	−70	−76
Whooping cough	*− 1*	− 1	−12	....	....	....	....	....	....	....	....	....
Diarrhœal diseases	*−22*	−14	−58	−66	−70	−66	−67	−64	−56	−44	−34	−24
Phthisis	*−22*	−22	−19	−18	−27	−26	−24	−16	−17	−16	−14	+ 2
Lung diseases	*+14*	+15	+ 1	− 9	−12	− 9	....	+12	+ 5	+ 8	+15	+33
Brain „	*− 1*	−15	− 1	+ 3	− 8	−10	− 8	+ 7	+15	+16	+15	+17
Heart diseases and dropsy	*+11*	−31	−17	....	....	+ 3	+ 5	+14	+12	+13	+16	+28
Kidney diseases	*+59*	+79	+60	+50	+56	+49	+46	+51	+60	+68	+67	+81
Cancer	*+24*	....	....	....	....	....	+ 7	+23	+20	+26	+32	+34
Childbirth and child-bed fever	*−14*	....	....	....	−17	−11	−13	−12	−23	....	....	....
Violence	*− 3*	− 9	−27	−19	−17	− 2	+ 5	+16	+13	+21	+19	+ 3
All other causes	*−13*	−12	−11	− 4	−11	−14	−12	− 9	− 8	−12	−16	−13
All causes	*− 9*	−11	−25	−22	−24	−22	−17	− 7	− 2	+ 3	+ 3	+ 1

* Tables IIIA and B are placed first to allow the Tables I and IIA and B to be placed side and side, as in the case of Table IVA and B, for more convenient comparison.

TABLE Ia.—*England and Wales.* MALES. *Deaths from Various Causes at Eleven Groups of Ages. Averages of the Five Years* 1876-80, *compared with Averages of the Ten Years* 1861-70.

	All Ages.		0—		5—		10—		15—		20—	
	1861-70.	1876-80.	*1861-70*	1876-80.	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70*	*'76-80*	*'61-70.*	*'76-80.*
Small pox	*1,893*	1,128	*955*	307	*189*	119	*64*	69	*93*	85	*164*	135
Measles	*4,784*	4,950	*4,434*	4,589	*290*	299	*30*	32	*10*	7	*7*	*7*
Scarlet fever	*10,537*	8,720	*6,860*	5,766	*2,799*	2,315	*534*	382	*152*	112	*72*	51
Diphtheria	*1,847*	1,421	*1,095*	785	*427*	402	*122*	104	*59*	33	*32*	18
Fever	*9,330*	4,764	*1,779*	853	*1,112*	582	*709*	427	*804*	509	*746*	504
Whooping cough	*5,071*	6,027	*4,907*	5,832	*155*	181	*6*	7	*1*	3	—	—
Diarrhœal diseases	*11,937*	11,246	*9,220*	9,512	*202*	89	*84*	23	*62*	19	*82*	26
Phthisis	*25,696*	26,061	*1,431*	1,304	*544*	520	*690*	635	*2,235*	1,914	*3,519*	3,093
Lung diseases	*38,479*	51,283	*17,366*	23,935	*698*	851	*227*	263	*322*	395	*474*	557
Brain „	*32,001*	36,867	*16,466*	16,947	*754*	935	*382*	462	*379*	433	*401*	408
Heart diseases and dropsy	*13,653*	18,340	*576*	477	*295*	248	*287*	304	*319*	383	*312*	383
Kidney diseases	*4,382*	6,766	*169*	334	*108*	191	*74*	109	*102*	147	*124*	181
Cancer	*2,542*	4,118	*19*	26	*10*	12	*9*	12	*20*	25	*25*	33
Violence	*12,244*	13,257	*2,134*	2,252	*758*	762	*864*	746	*876*	870	*921*	945
All other causes	*71,555*	74,923	*38,359*	40,822	*1,942*	2,049	*1,004*	1,079	*858*	951	*780*	811
All causes	*245,949*	269,871	*105,770*	113,741	*10,283*	9,555	*5.086*	4,654	*6,292*	5,886	*7,659*	7,152

	All Ages.		25—		35—		45—		55—		65—		75—	
	'61-70	*'76-80.*	*'61-70*	*'76-80.*	*'61-70*	*'76-80*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*
Small pox	*1,893*	1,128	*204*	203	*117*	115	*62*	61	*29*	22	*13*	9	*4*	4
Measles	*4,784*	4,950	*6*	7	*5*	5	*2*	3	*1*	1	—	—	—	—
Scarlet fever	*10,537*	8,720	*71*	55	*27*	29	*14*	7	*5*	3	*2*	1	*1*	—
Diphtheria	*1,847*	1,4 1	*36*	22	*24*	21	*20*	14	*18*	13	*11*	8	*4*	1
Fever	*9,330*	4,764	*1,051*	633	*940*	438	*817*	338	*698*	255	*484*	164	*190*	61
Whooping cough	*5,071*	6,027	—	1	*1*	1	—	—	—	—	—	—	—	1
Diarrhœal diseases	*11,937*	11,246	*207*	71	*243*	111	*305*	159	*412*	282	*557*	436	*563*	517
Phthisis	*25,696*	26,061	*6,109*	6,164	*4,940*	5,509	*3,490*	3,906	*1,987*	2,197	*667*	731	*84*	88
Lung diseases	*38,479*	51,283	*1,283*	1,589	*2,042*	2,697	*3,164*	4,041	*4,572*	5,879	*5,005*	6,424	*3,326*	4,652
Brain „	*32,001*	36,867	*1,050*	1,171	*1,591*	1,940	*2,029*	2,476	*2,811*	3,508	*3,609*	4,822	*2,529*	3,465
Heart diseases and dropsy	*13,653*	18,340	*992*	1,176	*1 463*	2,170	*1,977*	2,704	*2,760*	3,932	*3,042*	4,255	*1,630*	2,311
Kidney diseases	*4 382*	6,766	*355*	532	*481*	737	*595*	933	*771*	1,260	*955*	1,431	*650*	911
Cancer	*2,542*	4,118	*91*	127	*244*	352	*487*	758	*728*	1,212	*619*	1,087	*292*	472
Violence	*12,244*	13,257	*1,618*	1,739	*1,551*	1,693	*1,405*	1,603	*1,138*	1,382	*664*	843	*317*	424
All other causes	*71,555*	74,923	*1,700*	1,792	*2.301*	2,436	*2,960*	3,114	*3,952*	4,191	*6,354*	6,200	*11,336*	11,474
All causes	*245 949*	269,871	*14,773*	15,282	*15,970*	18,253	*17,327*	20,117	*19 882*	24,437	*21 982*	26.411	*20,926*	24,381

TABLE Ib.—*England and Wales.* FEMALES. *Deaths from Various Causes at Eleven Groups of Ages. Averages of the Five Years* 1876-80, *compared with Averages of the Ten Years* 1861-70.

	All Ages.		0—		5—		10—		15—		20—	
	1861-70	1876-80.	*1861-70.*	1876-80.	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'6 -70.*	*'76-80.*
Small pox	*1,586*	930	*933*	288	*176*	103	*63*	71	*83*	84	*96*	110
Measles	*4,626*	4,709	*4,219*	4,286	*321*	344	*36*	31	*13*	11	*10*	8
Scarlet fever	*10,250*	8,321	*6,486*	5,436	*2,710*	2,183	*601*	374	*162*	106	*107*	73
Diphtheria	*2,099*	1,628	*1,120*	814	*566*	505	*186*	141	*63*	46	*42*	27
Fever	*9,599*	4,812	*1,824*	835	*1,221*	654	*897*	536	*943*	569	*730*	428
Whooping cough	*6,209*	7,265	*5,961*	7,000	*230*	244	*12*	12	*3*	2	*1*	2
Diarrhœal diseases	*11,083*	10,152	*8,052*	8,221	*203*	104	*70*	28	*62*	22	*102*	40
Phthisis	*27,247*	25,030	*1,364*	1,252	*602*	587	*1,175*	1,156	*3,220*	2,802	*4,010*	3,445
Lung diseases	*33,481*	44,768	*14,510*	19,744	*695*	850	*247*	272	*317*	331	*388*	410
Brain „	*27,574*	32,123	*12,834*	12,975	*682*	812	*358*	444	*404*	444	*411*	429
Heart diseases and dropsy	*15,192*	19,907	*503*	410	*265*	265	*322*	386	*353*	419	*394*	474
Kidney diseases	*1,994*	3,751	*112*	239	*61*	118	*49*	92	*66*	121	*104*	179
Cancer	*5,740*	8,375	*19*	27	*9*	12	*9*	12	*18*	23	*33*	33
Childbirth and childbed fever	*3,525*	3,567	—	—	—	—	—	3	*167*	164	*640*	660
Violence	*4,140*	4,750	*1,667*	1,804	*398*	350	*151*	147	*152*	151	*120*	136
All other causes	*69,156*	71,154	*31,757*	33,243	*1,661*	1,761	*865*	996	*829*	872	*858*	838
All causes	*233,501*	251,242	*91,361*	96,574	*9,800*	8,902	*5.042*	4,701	*6,855*	6,167	*8,046*	7,292

	All Ages.		25—		35—		45—		55—		65—		75—	
	'61-70.	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*
Small pox	*1,586*	930	*116*	125	*64*	84	*30*	38	*16*	19	*6*	6	*3*	3
Measles	*4,626*	4,709	*15*	15	*7*	7	*3*	3	*1*	2	*1*	—	—	—
Scarlet fever	*10 250*	8,321	*120*	98	*42*	39	*12*	7	*6*	3	*2*	1	*1*	—
Diphtheria	*2,099*	1,628	*47*	33	*28*	26	*21*	12	*14*	12	*8*	8	*3*	2
Fever	*9,599*	4,812	*1,062*	621	*903*	409	*756*	309	*626*	232	*440*	154	*198*	54
Whooping cough	*6,209*	7,265	*1*	2	—	1	—	1	—	1	—	—	—	—
Diarrhœal diseases	*11,083*	10,152	*281*	107	*292*	122	*290*	146	*416*	282	*616*	476	*701*	605
Phthisis	*27,247*	25,030	*7,248*	6,409	*4,987*	4,824	*2,746*	2,641	*1,348*	1,353	*473*	477	*74*	85
Lung diseases	*33.481*	44,768	*1,014*	1,170	*1,446*	1,867	*2,242*	2,718	*3,836*	4,966	*5,008*	6,762	*3,779*	5,678
Brain „	*27,574*	32,123	*911*	973	*1,190*	1,470	*1,750*	2,321	*2,622*	3,638	*3,558*	4,821	*2,857*	3,796
Heart diseases and dropsy	*15,192*	19,907	*1,044*	1,270	*1,523*	2,005	*2,096*	2,702	*3,109*	4,202	*3,602*	4,904	*1,980*	2,869
Kidney diseases	*1,994*	3,751	*260*	441	*311*	544	*304*	563	*332*	667	*276*	542	*120*	246
Cancer	*5,740*	8,375	*270*	338	*860*	1,226	*1,482*	2,063	*1,502*	2,270	*1,073*	1,673	*465*	704
Childbirth and childbed fever	*3,525*	3,567	*1,525*	1,532	*1,136*	1,155	*58*	51	—	—	—	—	—	—
Violence	*4,140*	4,750	*224*	275	*245*	326	*273*	356	*262*	380	*274*	385	*374*	439
All other causes	*69,156*	71,154	*1,895*	1,931	*2,355*	2,480	*2,923*	3,127	*4,046*	4,297	*7 121*	7 024	*14,841*	14,589
All causes	*233,501*	251,242	*16,033*	15,335	*15,389*	16,585	*14,986*	17,058	*18,136*	22,324	*22 458*	27,233	*25,296*	29,070

TABLE IIa.—*England and Wales.* MALES. *Death-Rates per* 100,000 *Living at each Age, from Various Causes, at Eleven Groups of Ages. Averages of the Five Years* 1876-80, *compared with Averages of the Ten Years* 1861-70.

	All Ages.		0—		5—		10—		15—		20—	
	1861-70.	1876-80.	*1861-70.*	1876-80.	*61-70.*	'76-80.	*'61-70.*	'76-80.	*'61-70.*	'76-80.	*'61-70.*	'76-80.
Small pox	*18*	9	*66*	18	*15*	8	*6*	5	*9*	7	*18*	13
Measles	*46*	40	*307*	270	*23*	20	*3*	3	*1*	1	*1*	1
Scarlet fever	*101*	71	*475*	339	*222*	153	*47*	28	*15*	9	*8*	5
Diphtheria	*18*	12	*76*	46	*34*	27	*11*	8	*6*	3	*4*	2
Fever	*90*	39	*123*	50	*88*	38	*62*	31	*79*	42	*82*	47
Whooping cough	*49*	49	*339*	343	*12*	12	*1*	1	—	—	—	—
Diarrhœal diseases	*115*	92	*638*	559	*16*	6	*7*	2	*6*	2	9	2
Phthisis	*247*	213	*99*	77	*43*	34	*61*	47	*219*	157	*388*	288
Lung diseases	*369*	419	*1,201*	1,406	*55*	56	*20*	19	*32*	32	*52*	52
Brain „	*307*	301	*1,139*	996	*60*	62	*34*	34	*37*	35	*44*	38
Heart diseases and dropsy	*131*	150	*40*	28	*23*	16	*25*	22	*31*	31	*35*	36
Kidney diseases	*42*	55	*12*	20	*9*	13	*7*	8	*10*	12	*14*	17
Cancer	*24*	34	*1*	1	*1*	1	*1*	1	*2*	2	*3*	3
Violence	*118*	108	*148*	133	*60*	50	*76*	55	*86*	71	*102*	88
All other causes	*686*	612	*2,652*	2,395	*154*	135	*85*	79	*83*	78	*85*	75
All causes	*2,361*	2,204	*7,316*	6,681	*815*	631	*446*	343	*616*	482	*845*	667

	All Ages.		25—		35—		45—		55—		65—		75—	
	'61-70.	'76-80.	*'61-70.*	'76-80.	*'61-70.*	'76-80.	*'61-70.*	'76-80.	*'61-70.*	'76-80.	*'61-70.*	'76-80.	*'61-70.*	'76-80.
Small pox	*18*	9	*14*	12	*10*	8	*7*	6	*5*	3	*4*	2	*3*	3
Measles	*46*	40	—	—	—	—	—	—	—	—	—	—	—	—
Scarlet fever	*101*	71	*5*	3	*2*	2	*2*	1	*1*	—	*1*	—	*1*	—
Diphtheria	*18*	12	*2*	1	*2*	2	*2*	1	*3*	2	*3*	2	*3*	1
Fever	*90*	39	*70*	36	*79*	32	*90*	33	*116*	36	*147*	43	*149*	43
Whooping cough	*49*	49	—	—	—	—	—	—	—	—	—	—	—	1
Diarrhœal diseases	*115*	92	*14*	4	*20*	8	*34*	16	*68*	40	*169*	114	*443*	361
Phthisis	*247*	213	*409*	350	*417*	402	*386*	385	*330*	313	*202*	192	*66*	62
Lung diseases	*369*	419	*86*	90	*172*	197	*350*	398	*759*	837	*1,519*	1,685	*2,617*	3,252
Brain „	*307*	301	*70*	66	*134*	142	*224*	244	*467*	542	*1,095*	1,265	*1,990*	2,422
Heart diseases and dropsy	*131*	150	*67*	67	*123*	158	*219*	266	*458*	560	*923*	1,116	*1 283*	1,616
Kidney diseases	*42*	55	*24*	30	*41*	54	*66*	92	*128*	180	*290*	375	*511*	637
Cancer	*24*	34	*6*	7	*21*	26	*54*	75	*121*	173	*188*	285	*230*	330
Violence	*118*	108	*108*	99	*131*	124	*155*	158	*189*	197	*202*	221	*249*	296
All other causes	*686*	612	*115*	102	*194*	176	*328*	306	*655*	598	*1,926*	1,628	*8,919*	8,020
All causes	*2,361*	2,204	*990*	867	*1,346*	1,331	*1,917*	1,981	*3,300*	3,481	*6,669*	6,928	*16,464*	17,044

TABLE IIb.—*England and Wales.* FEMALES. *Death-Rates per* 100,000 *Living at each Age, from Various Causes, at Eleven Groups of Ages. Averages of the Five Years* 1876-80, *compared with Averages of the Ten Years* 1861-70.

	All Ages.		0—		5—		10—		15—		20—	
	1861-70.	1876 80	*1861-70.*	1876-80.	*'61-70.*	*'76-80.*	*'61 70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*
Small pox	*15*	7	*65*	17	*14*	7	*5*	5	*8*	7	*10*	9
Measles	*42*	36	*293*	251	*25*	23	*3*	2	*1*	1	*1*	1
Scarlet fever	*93*	64	*450*	319	*215*	143	*53*	28	*16*	9	*11*	6
Diphtheria	*19*	13	*78*	48	*45*	33	*17*	10	*6*	4	*4*	2
Fever	*88*	37	*127*	49	*97*	44	*80*	40	*91*	47	*72*	36
Whooping cough	*57*	56	*414*	410	*18*	16	*1*	1	—	—	—	—
Diarrhœal diseases	*101*	79	*559*	482	*16*	7	*6*	2	*6*	2	*10*	3
Phthisis	*248*	194	*95*	73	*48*	39	*105*	86	*311*	227	*397*	293
Lung diseases	*305*	347	*1,007*	1,157	*55*	56	*22*	20	*31*	27	*38*	35
Brain „	*251*	249	*891*	761	*54*	53	*32*	33	*39*	36	*41*	37
Heart diseases and dropsy	*139*	154	*35*	24	*21*	17	*29*	29	*34*	34	*39*	40
Kidney diseases	*18*	29	*8*	14	*5*	8	*4*	7	*6*	10	*10*	15
Cancer	*52*	65	*1*	2	*1*	1	*1*	1	*2*	2	*3*	3
Childbirth and childbed fever	*32*	28	—	—	—	—	—	—	*16*	13	*63*	56
Violence	*38*	37	*116*	106	*32*	23	*13*	11	*15*	12	*12*	12
All other causes	*630*	551	*2,204*	1,948	*130*	115	*77*	73	*80*	69	*85*	73
All causes	*2,128*	1,946	*6,343*	5,661	*776*	585	*448*	348	*662*	500	*796*	621

	All Ages.		25 —		35—		45—		55—		65—		75—	
	'61-70.	*'76-80.*	*'61 70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*	*'61-70.*	*'76-80.*
Small pox	*15*	7	*7*	7	*5*	6	*3*	3	*2*	2	*1*	1	*1*	1
Measles	*42*	36	*1*	1	*1*	1	—	—	—	—	—	—	—	—
Scarlet fever	*93*	64	*7*	5	*3*	3	*1*	1	*1*	—	*1*	—	*1*	—
Diphtheria	*19*	13	*3*	2	*2*	2	*2*	1	*2*	2	*2*	2	*2*	1
Fever	*88*	37	*64*	32	*71*	28	*79*	28	*96*	30	*115*	34	*120*	29
Whooping cough	*57*	56	—	—	—	—	—	—	—	—	—	—	—	—
Diarrhœal diseases	*101*	79	*17*	6	*23*	8	*30*	13	*64*	36	*161*	106	*426*	324
Phthisis	*248*	194	*438*	334	*390*	327	*285*	327	*207*	173	*124*	106	*45*	47
Lung diseases	*305*	347	*61*	61	*113*	126	*233*	244	*586*	634	*1,311*	1,505	*2 296*	3,045
Brain „	*251*	249	*55*	51	*93*	100	*182*	208	*402*	464	*931*	1,073	*1,736*	2,035
Heart diseases and dropsy	*139*	154	*63*	66	*119*	136	*218*	243	*476*	536	*943*	1,091	*1,203*	1,538
Kidney diseases	*18*	29	*16*	23	*24*	37	*32*	51	*51*	85	*72*	121	*73*	132
Cancer	*52*	65	*16*	17	*67*	83	*154*	185	*230*	290	*281*	372	*283*	378
Childbirth and childbed fever	*32*	28	*92*	80	*89*	78	*6*	5	—	—	—	—	—	—
Violence	*38*	37	*14*	14	*19*	22	*28*	32	*40*	49	*72*	86	*227*	235
All other causes	*630*	551	*115*	101	*184*	166	*303*	280	*620*	548	*1,866*	1,563	*9,015*	7,822
All causes	*2,128*	1,946	*969*	800	*1 203*	1,123	*1,556*	1,531	*2 777*	2,849	*5,880*	6,060	*15,428*	15,587

TABLE IVA.—*England and Wales.* MALES. *Diminution or Increase of Deaths from Various Causes at Eleven Groups of Ages, Average of Five Years* 1876 80, *compared with Average of Ten Years* 1861-70. *Showing Annual Gain* (−) *or Loss* (+) *of Lives under each heading. Allowance is made for Increase of Population at each Group of Ages.*

	All Ages.	0—	5—	10—	15—	20—
Small pox	− *1,106*	− 820	− 108	− 7	− 26	− 59
Measles	− *691*	− 632	− 49	− 4	− 5	− 1
Scarlet fever	− *3,758*	− 2,312	−1,044	− 253	− 70	− 34
Diphtheria	− *766*	− 504	− 110	− 41	− 38	− 20
Fever	− *6,188*	− 1,242	− 752	− 417	− 453	− 379
Whooping cough	+ *51*	+ 54	− 5	....	....	....
Diarrhœal diseases	− *2,752*	− 1,345	− 153	− 77	− 55	− 71
Phthisis	− *3,966*	− 381	− 133	− 186	− 761	−1,071
Lung diseases	+ *6,490*	+ 3,486	+ 13	− 7	+ 10	− 4
Brain ,,	− *465*	− 2,443	+ 30	+ 7	− 21	− 67
Heart diseases and dropsy	+ *2,565*	− 201	− 106	− 37	....	+ 14
Kidney diseases	+ *1,702*	+ 135	+ 61	+ 21	+ 25	+ 34
Cancer	+ *1,187*	+ 4	....	+ 1	+ 1	+ 3
Violence	− *1,063*	− 261	− 148	− 282	− 178	− 145
All other causes	− *8,425*	− 4,346	− 280	− 116	− 74	− 112
All causes	−*17,185*	−10,808	−2,784	−1,398	−1,645	−1,912

	All Ages.	25—	35—	45—	55—	65—	75—
Small pox	− *1,106*	− 38	− 20	− 9	− 12	− 6	− 1
Measles	− *691*	....	− 1	+ 1	....	....	....
Scarlet fever	− *3,758*	− 29	− 2	− 9	− 3	− 1	− 1
Diphtheria	− *766*	− 21	− 7	− 8	− 8	− 5	− 4
Fever	− *6,188*	− 609	−649	−580	− 558	− 396	− 153
Whooping cough	+ *51*	+ 1	....	....	....	....	+ 1
Diarrhœal diseases	− *2,752*	− 174	−170	−184	− 198	− 208	− 117
Phthisis	− *3,966*	−1,053	−202	− 14	− 118	− 40	− 7
Lung diseases	+ *6,490*	+ 73	+336	+487	+ 552	+ 635	+ 909
Brain ,,	− *465*	− 69	+101	+197	+ 533	+ 648	+ 619
Heart diseases and dropsy	+ *2,565*	+ 4	+479	+483	+ 716	+ 737	+ 476
Kidney diseases	+ *1,702*	+ 113	+181	+265	+ 362	+ 326	+ 179
Cancer	+ *1,187*	+ 19	+ 70	+211	+ 364	+ 371	+ 143
Violence	− *1,063*	− 172	−100	+ 25	+ 56	+ 75	+ 67
All other causes	− *8,425*	− 216	−224	−212	− 414	−1,149	−1,282
All causes	−*17,185*	−2,171	−208	+653	+1,272	+ 987	+ 829

TABLE IVB.—*England and Wales.* FEMALES. *Diminution or Increase of Deaths from Various Causes at Eleven Groups of Ages. Average of Five Years* 1876-80, *compared with Average of Ten Years* 1861-70. *Showing Annual Gain (—) or Loss (+) of Lives under each heading. Allowance is made for Increase of Population at each Group of Ages.*

	All Ages.	0—	5—	10—	15—	20—
Small pox	— *945*	— 817	— 109	— 5	— 15	— 2
Measles	— *777*	— 711	— 43	— 12	— 4	— 4
Scarlet fever	— *3,879*	— 2,247	—1,084	— 348	— 87	— 51
Diphtheria	— *870*	— 513	— 177	— 82	— 30	— 22
Fever	— *6,510*	— 1,326	— 808	— 541	— 554	— 420
Whooping cough	— *93*	— 61	— 33	— 2	— 2	+ 1
Diarrhœal diseases	— *2,919*	— 1,317	— 141	— 56	— 52	— 79
Phthisis	— *6,806*	— 364	— 139	— 255	—1,034	—1,216
Lung diseases	+ *5,404*	+ 2,557	+ 12	— 25	— 47	— 41
Brain ,,	— *313*	— 2,227	— 10	+ 14	— 37	— 49
Heart diseases and dropsy	+ *2,121*	— 186	— 54	— 1	— 1	+ 16
Kidney diseases	+ *1,417*	+ 106	+ 44	+ 33	+ 42	+ 58
Cancer	+ *1,661*	+ 4	+ 1	+ 1	+ 2	— 5
Childbirth and childbed fever	— *523*	....	....	+ 3	— 35	— 84
Violence	— *124*	— 171	— 130	— 34	— 30	— 3
All other causes	— *9,837*	— 4,372	— 241	— 42	— 115	— 159
All causes	—*22,993*	—11,645	—2,912	—1,352	—1,999	—2,060

	All Ages.	25—	35—	45—	55—	65—	75—
Small pox	— *945*	— 9	+ 10	+ 3	....	— 1	....
Measles	— *777*	— 2	— 1	.. .	+ 1	— 1	....
Scarlet fever	— *3,879*	— 41	— 10	— 7	— 4	— 1	+ 1
Diphtheria	— *870*	— 21	— 6	— 12	— 5	— 1	— 1
Fever	— *6,510*	— 609	— 634	—565	—519	— 364	— 170
Whooping cough	— *93*	+ 1	+ 1	+ 1	+ 1	....	....
Diarrhœal diseases	— *2,919*	— 218	— 215	—189	—217	— 246	— 189
Phthisis	— *6,806*	—1,983	— 937	—534	—265	— 80	+ 1
Lung diseases	+ *5,404*	— 4	+ 197	+126	+362	+ 870	+1,397
Brain ,,	— *313*	— 82	+ 95	+298	+491	+ 635	+ 559
Heart diseases and dropsy	+ *2,121*	+ 61	+ 246	+279	+471	+ 664	+ 626
Kidney diseases	+ *1,417*	+ 141	+ 185	+212	+269	+ 217	+ 110
Cancer	+ *1,661*	+ 20	+ 233	+350	+467	+ 411	+ 177
Childbirth and childbed fever	— *523*	— 234	— 157	— 16	....	....	....
Violence	— *124*	+ 16	+ 44	+ 49	+ 66	+ 63	+ 15
All other causes	— *9,837*	— 264	— 243	—254	—561	—1,357	—2,229
All causes	—*22,993*	—3,228	—1,192	—268	+557	+ 809	+ 297

TABLE Va.—*England and Wales.* MALES. *Deaths from Various Causes during Childhood and Youth, Working-Life, and Old Age. Averages of the Five Years* 1876-80, *compared with Averages of the Ten Years* 1861-70.

Ages	0—20.		20—65.		65—.	
	1861-70.	1876-80.	*1861-70.*	1876-80.	*1861-70.*	1876-80.
Small pox	*1,302*	578	*574*	535	*16*	13
Measles	*4,764*	4,926	*20*	23	—	—
Scarlet fever	*10,345*	8,575	*189*	145	*3*	1
Diphtheria	*1,702*	1,323	*130*	89	*15*	9
Fever	*4,404*	2,371	*4,252*	2,168	*674*	224
Whooping cough	*5,068*	6,022	*3*	3	—	1
Diarrhœal diseases	*9,568*	9,644	*1,248*	649	*1,121*	953
Phthisis	*4,900*	4,373	*20,045*	20,868	*751*	820
Lung diseases	*18,613*	25,444	*11,535*	14,764	*8,332*	11,076
Brain ,,	*17,981*	18,777	*7,882*	9,804	*6,138*	8,287
Heart diseases, &c.	*1,477*	1,412	*7,505*	10,365	*4,672*	6,565
Kidney diseases	*452*	781	*2,325*	3,643	*1,605*	2,341
Cancer	*58*	76	*1,574*	2,483	*910*	1,559
Violence	*4,631*	4,629	*6,632*	7,361	*981*	1,267
All other causes	*42,165*	44,905	*11,697*	12,344	*17,690*	17,676
All causes	*127,430*	133,836	*75,611*	85,242	*42,908*	50,792

TABLE Vb.—*England and Wales.* FEMALES. *Deaths from Various Causes during Childhood and Youth, Working-Life, and Old Age. Averages of the Five Years* 1876-80, *compared with Averages of the Ten Years* 1861-70.

Ages	0—20.		20—65.		65—.	
	1861-70.	1876-80.	*1861-70.*	1876-80.	*1861-70.*	1876-80.
Small pox	*1,254*	546	*323*	376	*9*	9
Measles	*4,589*	4,672	*36*	36	*1*	1
Scarlet fever	*9,960*	8,099	*287*	220	*3*	1
Diphtheria	*1,935*	1,506	*152*	110	*11*	10
Fever	*4,884*	2,604	*4,076*	1,999	*638*	208
Whooping cough	*6,206*	7,258	*3*	7	—	—
Diarrhœal diseases	*8,387*	8,375	*1,380*	697	*1,317*	1,081
Phthisis	*6,361*	5,797	*20,339*	18,672	*547*	562
Lung diseases	*15,769*	21,197	*8,926*	11,131	*8,787*	12,440
Brain ,,	*14,277*	14,675	*6,882*	8,831	*6,415*	8,617
Heart diseases, &c.	*1,443*	1,480	*8,167*	10,653	*5,582*	7,773
Kidney diseases	*288*	570	*1,310*	2,394	*396*	788
Cancer	*54*	74	*4,147*	5,925	*1,538*	2,377
Childbirth, &c.	*167*	167	*3,358*	3,398	—	—
Violence	*2,368*	2,452	*1,124*	1,473	*649*	824
All other causes	*35,115*	36,872	*12,081*	12,671	*21,962*	21,613
All causes	*113,058*	116,344	*72,590*	78,594	*47,853*	56,303

TABLE VIa.—*England and Wales.* MALES. *Death-Rates per* 100,000 *Living at each Age from Various Causes during Childhood and Youth, Working-Life, and Old Age. Averages of the Five Years* 1876-80, *compared with Averages of the Ten Years* 1861-70.

Ages	0—20.		20—65.		65—.	
	1861-70.	1876-80.	*1861-70.*	1876-80.	*1861-70.*	1876 80.
Small pox	*27*	10	*11*	9	*4*	3
Measles	*98*	85	—	—	—	—
Scarlet fever	*213*	148	*4*	3	—	—
Diphtheria	*35*	23	*3*	2	*3*	2
Fever	*90*	41	*84*	37	*148*	43
Whooping cough	*104*	104	—	—	—	—
Diarrhœal diseases	*197*	166	*25*	11	*245*	182
Phthisis	*101*	76	*394*	352	*164*	156
Lung diseases	*382*	439	*227*	249	*1,824*	2,113
Brain ,,	*369*	324	*155*	166	*1,344*	1,581
Heart diseases, &c.	*30*	24	*147*	175	*1,023*	1,252
Kidney diseases	*9*	14	*46*	62	*351*	447
Cancer	*1*	1	*31*	42	*199*	297
Violence	*95*	80	*130*	124	*215*	242
All other causes	*866*	774	*228*	207	*3,875*	3,370
All causes	*2,617*	2,309	*1,485*	1,439	*9,395*	9,688

TABLE VIb.—*England and Wales.* FEMALES. *Death-Rates per* 100,000 *Living at each Age from Various Causes during Childhood and Youth, Working-Life, and Old Age. Averages of the Five Years* 1876-80, *compared with Averages of the Ten Years* 1861-70.

Ages	0—20.		20—65.		65—.	
	1861-70.	1876-80.	*1861-70.*	1876-80.	*1861-70.*	1876-80.
Small pox	*26*	9	*6*	6	*2*	2
Measles	*94*	80	*1*	1	—	—
Scarlet fever	*205*	139	*5*	3	—	—
Diphtheria	*40*	26	*3*	2	*2*	2
Fever	*100*	45	*73*	31	*117*	33
Whooping cough	*128*	125	—	—	—	—
Diarrhœal diseases	*173*	144	*25*	11	*241*	170
Phthisis	*131*	100	*366*	289	*100*	88
Lung diseases	*324*	365	*161*	172	*1,608*	1,956
Brain ,,	*294*	253	*124*	137	*1,174*	1,355
Heart diseases, &c.	*30*	26	*147*	165	*1,021*	1,222
Kidney diseases	*6*	10	*24*	37	*73*	124
Cancer	*1*	1	*75*	92	*281*	374
Childbirth, &c.	*3*	3	*60*	53	—	—
Violence	*49*	42	*20*	23	*119*	130
All other causes	*721*	634	*215*	193	*4,017*	3,398
All causes	*2,325*	2,002	*1,305*	1,215	*8,755*	8,854

TABLE VII.—*England and Wales. Percentage Fall or Rise of the Death-Rates from Various Causes at Three Groups of Ages representing Childhood and Youth, Working-Life, and Old Age respectively. Average of the Five Years* 1876-80, *compared with Average of the Ten Years* 1861-70.

	Males.			Females.		
Ages	0—20.	20—65.	65—	0—20	20—65	65—
Small pox	−63	−20	....	−65	....	....
Measles	−13	....	....	−15	....	....
Scarlet fever	−30	−32	....	−32	−40	....
Diphtheria	−35	−42	....	−35	−33	....
Fever	−55	−56	−71	−55	−58	−72
Whooping cough	....	....	....	− 2	....	....
Diarrhœal diseases	−15	−55	−26	−17	−56	−29
Phthisis	−25	−11	− 5	−24	−21	−12
Lung diseases	+15	+10	+16	+13	+ 7	+22
Brain ,,	−12	+ 7	+18	−14	+10	+15
Heart diseases and dropsy	−19	+19	+22	−13	+12	+20
Kidney diseases	+45	+35	+27	+67	+54	+70
Cancer	....	+36	+49	....	+23	+33
Childbirth and childbed fever	....	....	....	....	−12	....
Violence	−16	− 5	+13	−14	+15	+ 9
All other causes	−11	− 9	−13	−12	−10	−15
All causes	− 12	− 3	+ 3	−14	− 7	+ 1

TABLE VIII.—*England and Wales. Diminution or Increase of Deaths from Various Causes at Three Groups of Ages. Average of Five Years* 1876-80, *compared with Average of Ten Years* 1861-70. *Showing Annual Gain (−) or Loss (+) of Lives during Childhood and Youth, Working-Life, and Old Age respectively, after Allowance is made for Increase of Population at each Age.*

	Males.			Females.		
Ages	0—20.	20—65.	65—.	0—20.	20—65.	65—70.
Small pox	− 961	− 138	− 7	− 946	+ 2	− 1
Measles	− 690	− 1	....	− 770	− 6	− 1
Scarlet fever	− 3,679	− 77	− 2	− 3,766	− 113	....
Diphtheria	− 693	− 64	− 9	− 802	− 66	− 2
Fever	− 2,864	−2,775	− 549	− 3,229	−2,747	− 534
Whooping cough	+ 49	+ 1	+ 1	− 98	+ 5	....
Diarrhœal diseases	− 1,630	− 797	− 325	− 1,566	− 918	− 435
Phthisis	− 1,461	−2,458	− 47	− 1,792	−4,935	− 79
Lung diseases	+ 3,502	+1,444	+1,544	+ 2,497	+ 640	+2,267
Brain ,,	− 2,427	+ 695	+1,267	− 2,260	+ 753	+1,194
Heart diseases and dropsy	− 344	+1,696	+1,213	− 242	+1,073	+1,290
Kidney diseases	+ 242	+ 955	+ 505	+ 225	+ 865	+ 327
Cancer	+ 6	+ 667	+ 514	+ 8	+1,065	+ 588
Childbirth and childbed fever	....	....	....	− 32	− 491	....
Violence	− 869	− 336	+ 142	− 365	+ 163	+ 78
All other causes	− 4,816	−1,178	−2,431	− 4,770	−1,481	−3,586
All causes	−16,635	−2,366	+1,816	−17,908	−6,191	+1,106

TABLE IX.—*England and Wales. Death-Rates of Females, compared to Death-Rates of Males taken as* 100, *from Various Causes, during Childhood and Youth, Working-Life, and Old Age. Average of Five Years* 1876-80.

	0—20.	20—65.	65—.
Small pox	90	67	67
Measles	94	—	—
Scarlet fever	94	100	—
Diphtheria	113	100	100
Fever	110	84	77
Whooping cough	120	—	—
Diarrhœal diseases	87	100	93
Phthisis	132	82	56
Lung diseases	83	69	93
Brain ,,	78	83	86
Heart diseases and dropsy	108	94	98
Kidney diseases	71	61	28
Cancer	100	219	126
Childbirth and childbed fever	—	—	—
Violence	53	19	54
All other causes	82	93	101
All causes	87	84	91

DISCUSSION *on* DR. LONGSTAFF'S PAPER.

MR. A. H. BAILEY said he was very grateful to Dr. Longstaff for the pains he had taken to elucidate this difficult subject, but while he implicitly trusted the accuracy of the tables, he somewhat distrusted the materials from which they had been deduced. When Mr. Humphreys read his paper last session, he (Mr. Bailey) said it was premature to jump to the conclusion that the mortality of the country had decreased, merely because the results of five, or six, or seven years, when there had been no epidemics, had proved favourable, and that though it clearly appeared that the mortality of females has improved, the rate of mortality of males was precisely the same as forty years ago. So many mistakes had been made in past times about improvement in human mortality that it was better to be a little cautious, and the same remark applied to the returns of ages. It should be remembered that the ages of the living were given by the living themselves, and yet the compilers of the census fairly and justly said that the figures must be taken with caution, and only as approximations. On the other hand the

ages of death were given by the relatives and friends of the deceased persons. For instance, the ages of the deaths in workhouses must be loosely returned, and in many cases be mere guesses. It therefore seemed to him that it was scarcely worth while to deduce these elaborate results from such insufficient material. There was also considerable difficulty about the causes of death. Comparing the returns in the early registrar-general's reports with the later, it appeared to him that the same diseases were returned under different headings. Take for example phthisis, which was in this country the most formidable cause of death. In the early reports it was grouped under "Diseases of the respiratory organs." Later on it appeared as a tubercular disease, classed with scrofula; while at present it figured among constitutional diseases, such as gout; and yet the popular idea in the country was that it was a disease of the lungs. He hoped that it would not be thought he was not most grateful to Dr. Longstaff for the pains he had taken to elucidate a difficult subject, because he said much caution was needed with regard to the materials from which the results were derived.

Mr. N. A. Humphreys said, with regard to the remarks of the last speaker, there was a great temptation to criticise such papers hostilely on account of the imperfections of the materials from which the statistics were constructed; but if statisticians were to wait until the materials they had to use were perfect, and they could deal with veritable facts, they would have to wait a very long time before doing any work at all. Dr. Longstaff had shown a great deal of caution and skill in avoiding the greatest difficulties in dealing with a subject of this kind. One of the most valuable results of the paper was that it showed that the entire decrease of the death-rate had taken place in two classes of diseases, zymotic diseases and phthisis. This was a very encouraging fact for those who took an interest in sanitary matters, because those were the very diseases which had most attracted the efforts of sanitarians. The tables showed that the whole decrease had occurred in the principal zymotic diseases and phthisis, whereas the mortality from all other diseases had remained practically stationary. The decline of fever was a great triumph of sanitation. Measles and whooping cough, which showed no decline, had not yet been attacked in the same way, and there had scarcely been any attempt to isolate them. One great point that Dr. Longstaff made was showing that the general impression of the interchange between lung diseases and phthisis in the death registry was not tenable. At those very ages showing the greatest decrease in fatal phthisis, lung diseases had not increased. In one part of the paper Dr. Longstaff asked what effect these changes in the death-rate had made in the constitution of the population. Those changes had only been going on a few years, and therefore it could hardly be expected that there would be much change in the constitution of the population as yet; but comparing 1871 with 1881, there were some considerable changes, and doubtless hereafter they would be greater. Still the change in the last ten years meant a reduction of 5,000

deaths in England and Wales. But this reduction in its effect on the rate of mortality was not relatively of great importance, because it would only make a difference of one-fifth of one per thousand in the annual death-rate. In his own recent paper he had pointed out that there had been a slight but decided increase in the mortality at later ages. People had asked what was the use of a decline of mortality among young people if elderly people died faster; but the increase in the later ages appeared to have ceased, and in 1881-83 there was a decrease at each group of ages, including those of elderly persons. Dr. Longstaff had suggested that for the help of medical officers of health and others, the registrar-general should publish a table of factors which would enable people to correct the various returns in different towns, so as to make the recorded death-rates strictly comparable. This suggestion had been to some extent anticipated; and a table of such factors would appear in the registrar-general's summary for the twenty-eight large towns of England and Wales in 1883, now in the press. No one present could speak more confidently than he could as to the immense amount of work involved in Dr. Longstaff's calculations, and as to the great difficulties he had had to contend with in consequence of the imperfections of the materials with which he had to deal, imperfections of which the registrar-general's office were thoroughly aware.

Sir R. W. Rawson said he could not approach this question from a medical point of view, or from that of an actuary, but from a statist's point of view. In the objections raised to the paper by Mr. Bailey, the uncertainty in the record of ages prevailed over the whole period, and the experience of statists showed that errors of that nature balanced one another. It was therefore fair to compare the ages in the first ten years with those in the latter period of five years, more particularly when the observations covered such a narrow period as fifteen years, during which no material change had been made in the system or the practice of observation. Although he thanked Mr. Bailey for suggesting caution in receiving the conclusions presented in the paper, he thought there was not much ground for his objection to them. He heartily joined with Mr. Humphreys in thanking Dr. Longstaff for his very valuable paper, which not only showed interesting results drawn from official and most carefully observed documents, but also suggested observations for the future which might lead to very important consequences, and encourage those who were interested in improving the sanitary condition of the population.

Mr. E. Lund (Manchester) said that in questions of statistics there was an abstract view in which we endeavoured to secure almost mathematical accuracy; but the data to be dealt with were so variable, that only a distant approximation to such a result could be obtained. There was also a thoroughly practical view, the object of which was to see what could be done with knowledge thus imperfectly obtained. He had been much struck with one or

two practical remarks in the paper. One had reference to whether quinquennial or decennial periods for observation were the best; and another was that the period of life from 17 to 35 was that in which a member of society was most valuable to it. It had often occurred to him, looking at the matter from a practical point of view, that if the death-rate of towns and counties could be drawn out at so much per thousand or ten thousand, and this again analysed for quinquennial periods, those who had not the opportunity of going into the matter scientifically would have forced upon them the question of the cause of death at those different periods of life. In the factory districts that problem had to be dealt with. There was there a very high death-rate, but if the deaths under 20, or 15, or 10 were eliminated, the rate for the middle period of life was not so high as might be anticipated, cases of fever being excluded. The cause of this was apparent. The parents had to go to their work and the children were neglected. In addition to this there was the great problem of milk supply and dietary for children. With regard to the recent gain at one end of the scale and loss at the other, although it was but an approximation, it taught a very good lesson, and showed that by a more accurate record of deaths, and more accurate nomenclature of diseases, information might be obtained which would become more and more valuable and applicable to the great question of sanitary reform. In the north of England an attempt had been made to have a record not only of cause of death but also of disease, so that from a sanitary point of view it might be known what was going on in the population, not by the final result, but by the progress of a few classes of diseases, particularly the zymotic. They were however met here with the same objection as to errors of diagnosis or imperfect information. He was sure that in addressing the members of the Statistical Society he need not refer to that grand principle, that by taking large groups of facts the errors were diluted to an almost infinitesimal degree. It had given him great pleasure to listen to the paper, and to be permitted to take part in the discussion.

Mr. Robert Lawson considered that five years was rather too short a period to be accepted as fairly deciding the point. The paper stated that diseases of the lungs had increased while phthisis had decreased, but that involved an understanding of what was meant by diseases of the lungs. Dr. Longstaff had included in diseases of the lungs bronchitis, which had decidedly increased, whereas pneumonia had diminished. In the first quinquennium from 1861 to 1879, the death-rate from phthisis, males and females, throughout England, was 2,528 per million; in the next it had fallen to 2,499; in the next, to 2,219; in the next to 2,042, showing a distinct decrease; but taking diseases of the lungs (including bronchitis), the death-rate in the first quinquennium was 3,323 per million; in the next, 3,396; in the next, 3,687; and in the next, 3,800, showing a regular increase. Adding these numbers together, they gave for the first quinquennium, 5,851; for the second, 5,895; for the third, 5,906; and for the fourth, 5,842.

These results were not in accordance with the statement of Dr. Longstaff that the increase of lung disease was not equivalent to the reduction of phthisis. For the decennial periods the numbers were virtually the same, 5,873 for the first period and 5,874 for the second. By taking the longer period, some inequalities were got over which a shorter period introduced. Therefore, while admitting the value of Dr. Longstaff's remarks, he thought it would be better to wait a little longer to see how far the present low rate was borne out. He understood Dr. Longstaff to say that phthisis was a disease separate and distinct from other diseases of the lungs. A good many years ago he examined the returns of the army with regard to that very point, and the most striking fact he noticed was that, taking the returns of troops in this country and on all foreign stations singly, the frequency of phthisis in each was undoubtedly connected with the mortality from pneumonia. Among the civil population in this country, taking the period from 1850 to 1879, in the first quinquennium there were 2·28 deaths from phthisis for every death from pneumonia; in the next there were 2·05 deaths to one; in the next 2·14; in the next 2·36; in the next 2·26; and in the next 2·05; showing no very material alteration in the relation between phthisis and pneumonia, though both underwent considerable reduction during the period. It would seem therefore that there was really some connection between the prevalence of inflammatory affections of the lungs, and the prevalence of phthisis. He thought it was better to take the whole population, because in that case the incidence or power of the causes of pneumonia generally was shown, and separate portions of the population were subject to that incidence, though they themselves did not actually show this form of disease. Taking ages from 5 to 35 there was an extremely small proportion of deaths from pneumonia relatively to the other disease, from 1860-70, and from 1876-80, there were in the first period 9 deaths from phthisis among males and 14 among females to one in each case from pneumonia. In the subsequent period pneumonia was a good deal more frequent, and among males there was 1 death from pneumonia to 6 from phthisis, and among females 1 to $9\frac{1}{2}$. These periods were too short to make any decided deduction from, but taken with the other figures they showed that there was some relation between the prevalence of pneumonia generally and the prevalence of phthisis.

Mr. F. Hendriks thought the Statistical Society might some day suggest to the Government the advisability of amending the law of registration, by requiring that a certificate should be given gratis on the birth of any person. It should be printed upon the certificate that its preservation was a matter of importance. The price now charged for a certificate was a matter of consequence to the million, and the result was that in time through the want of a certificate a degree of uncertainty arose in the minds of the lower classes as to their exact ages. Even in the army it was found that great errors arose as to the ages of recruits through the absence of certificates. It was a great reflection upon England that we should

in this matter be so far behind the other nations of Europe. Foreigners had been perfectly astounded to find that in this country there was nothing corresponding to the French *acte de naissance*, which is carefully kept because all Frenchmen knew that it had to be produced on certain occasions in their lives. In Sweden each parish had a registry of the births and deaths of all inhabitants kept in great detail, and if an individual moved to another parish he had to produce his *acte de naissance*, and have it entered in the parish to which he went. The gravest possible mistakes were made in England by stating ages in the census returns in a roughly approximate way. He agreed with Sir Rawson Rawson that there might be a kind of balance of errors, but that was not quite satisfactory, and it was not to our credit that such a state of things should exist. The certificate of birth should be given gratis, or at a mere nominal rate of charge on registration, and should be as religiously kept as marriage lines were in Scotland. On one occasion when some census returns were being discussed in the presence of the late Prince Consort, at a section of the London Statistical Congress, his Royal Highness, who seemed well acquainted with the more careful system of registration in Germany and France, was much surprised at the looseness of the system of registration in England. He (Mr. Hendriks) hoped that some day or other there would be an improvement in that respect.

Mr. N. A. Humphreys said that servants and persons with no special knowledge were not now, except in rare cases, legal informants of registration of death. With regard to giving certificates of birth at the time of registration, he was afraid the English people would not be so careful of them as some foreign nations were, and that they would seldom be forthcoming when they were required.

Mr. A. H. Bailey said it was perfectly true that over a large collection of facts an average obtained, but in the matter of the return of the ages living there was a distinct tendency to error in one direction. For instance there was a great excess of ladies living between the ages of 20 and 25, and a corresponding diminution between 25 and 30. It might be that the ages at death, which were in many cases given by nurses, might be as much in one direction as another; but on the other hand when people attained a certain age there was a strong tendency to make it greater than it really was, and that was not corrected by numbers.

The President said he was sure all present would agree in giving a cordial vote of thanks to Dr. Longstaff for his very interesting paper, which had stimulated an interesting discussion. Mr. Bailey had again given them the benefit of his opinions about the value of "ages" in the registrar-general's returns, and that had led to a very good discussion indeed; and on other points also the remarks which had been made would be very useful. Although he could not profess any special acquaintance with vital statistics, he could agree with Sir Rawson Rawson in expressing, as a statis-

tician, accustomed to deal with statistical tables, a very strong opinion as to the value of the paper that had been read. He had seen very few papers to be compared with Dr. Longstaff's for the excellence of the method which had been followed. The data might have been as imperfect as Mr. Bailey had described, but Dr. Longstaff had certainly made a good use of his material. He had stated his conclusions carefully, not pushing them to exaggeration in any way, and he had drawn attention to every kind of circumstance which would qualify the data. The main conditions of excellence in a statistical paper had thus been complied with. Having had the advantage of reading the paper beforehand, he (the President) had been paying some attention to the tables while Dr. Longstaff was reading it, and he thought they more than justified what Mr. Humphreys had said as to the very great pains the author must have taken. The tables were very clearly arranged, and the facts thus deduced from the registrar-general's returns must be of great value by way of record. Whatever might be the precise value of the facts at the present moment, there could be no doubt that some years hence the collection of them in such a way would be found very useful indeed by statisticians. The paper was in fact the kind of paper which it was most useful for the Society to have prepared and read at its meetings, and he thought they were much indebted to Dr. Longstaff for what he had done. With regard to the question which had been raised about the value of the average of ages, he should very much have liked it if Mr. Bailey and Mr. Hendriks had added to their observations by giving some idea of the nature of the variations from the true ages in the ages returned by the persons concerned. Those gentlemen stated that the returns were not to be relied upon. He presumed they were able to say so in a great many cases from having actually compared the ascertained ages of the people who had died with the ages that had been returned. Perhaps on some future occasion they would give the Society a statement of the degree of error in a great many cases. If they had done so at the present meeting, some means would have been afforded of judging of the limit of error which was likely to arise in records of this kind, and of saying with some definiteness whether the compensation of errors was likely to be material in this matter. Mr. Bailey had said that between 25 and 30 there was an actual ascertained tendency to give the wrong age; but if so much could be ascertained, it might also have been ascertained that at other ages there was really a compensation of errors which might be depended upon. He threw this out as a suggestion to Mr. Bailey, Mr. Hendriks, and other insurance friends; and he thought it would be very interesting indeed to have a statement of the number of cases in which the stated age was the actual age, and the cases in which there were variations from the true age, with, in the latter case, the degree or variation. If that were done, it might be found to indicate that, among a great many classes of the community at least, the age which the registrar-general obtained was to be depended upon to a very considerable extent at a great many ages. He had no doubt that Dr. Longstaff would reply to many questions which had been

raised, but he should like to make one more remark. Whatever statements were made about the ages, they hardly affected many of the substantial conclusions of the paper, with reference for instance to the diminution of deaths from fever, and causes of that kind, where the diminution might be ascribed to sanitary influences. So far as he could judge, that part of the paper, as well as other parts, had not been challenged at all, and it seemed to him that it was one of the most useful parts. It established with some kind of certainty that those diseases which could be attacked by sanitary agencies had considerably diminished within the last twenty or forty years. That was really a very valuable conclusion, and it was certainly a great encouragement to sanitary reformers to persevere with their labours. No doubt it was true that the diminution of mortality was also due to some extent to better food, and to better medicinal appliances, and other causes; but still the fact was that the diseases which had diminished were those which might be attacked, so far as was known, by sanitary influences, and if over-crowding and similar evils had diminished during the last twenty years, and a diminution of mortality had followed, that was a very satisfactory result indeed of the figures which had been put before the Society. What Mr. Humphreys had said about there being apparently a decline in the mortality at the later ages in the last two or three years was very interesting. It was to be observed that all the causes of the improvement in the duration of life which had been at work during the last thirty or forty years had not as yet had time to tell. At first they might have merely effected a prolongation of feeble lives, so that there would be a tendency for a time for the mortality to increase in later ages; but when all these things had been a considerable time at work, there might be a tendency for the mortality at higher ages again to diminish. The experience of one or two years was not sufficient for a complete conclusion upon this point, but the facts stated by Mr. Humphreys were certainly interesting as an indication of what might be. The Society was also indebted to Mr. Humphreys for his statement that the registrar-general was about to publish a factor for the different towns, allowing for the differing composition of the population as to age and sex, by which the rate of mortality might be made available for comparison with other rates. He thought that this addition to the information would be very valuable, and the Society ought by all means to recognise it. In conclusion, he had to ask the meeting to give a cordial vote of thanks to Dr. Longstaff for his very able and interesting paper.

Dr. Longstaff (in reply) said he had fully expected that his paper would be met with the line of objection that Mr. Bailey had brought forward, and he was very glad it had been met in that way, because, in the first place, if he might presume to say so, it was a very right and proper way of dealing with such a paper; and next, the views which Mr. Bailey represented were those that were widely prevalent. At the same time he might honestly say that no conclusion he had drawn in the paper had been in the slightest degree

invalidated by any one of Mr. Bailey's criticisms, and that gentleman was hardly fair as to one or two points. In the first place, he (Dr. Longstaff) expressly did not take for his first period that which Mr. Humphreys took, because there was at that time a greater difference in diagnosis, and the care with which certificates were filled up was very much less than at the present time. One speaker objected that five years was two short a period; but he compared the period 1861-70 because for those ten years all the facts were already calculated in the registrar-general's report, with the latter half of the next decade, because that was the period of exceptionally low mortality. He thought it better to look and see in what respect it was low, and he carefully "hedged" by saying: "If this state of affairs should go on, such and such things would happen." With regard to the objections made about the uncertainty as to age, in the first place he included all ages over 75 together, and made no attempt to specify ages after that, because that was the point at which the errors most often occurred. The other critical period, from a medical point of view, was the first five years, and therefore he had grouped them together. As the greater part of the deaths occurred in the first two years, any error of a year or so in stating a child's age would have an insignificant effect upon his figures. Although his tables showed the increase of mortality at specified ages to amount to such and such a number per cent., he had drawn no special conclusions from these figures. He presumed that the average error in age would not amount to more than from two to seven years. If the returns were taken, and from them a mathematical curve was drawn of the incidence of mortality at every age of life from one year up to a hundred, then there would be errors such as in the census were fully alluded to. But that did not in the slightest degree affect his figures. He thought that Mr. Humphreys had sufficiently answered Mr. Bailey as to the question of phthisis. Mr. Lawson might remember a paper that he (Dr. Longstaff) read before the Epidemiological Society, in which he showed that if a number of medical men signed a hundred certificates in which the death was attributed to phthisis, and another hundred in which death was stated to have resulted from bronchitis, they clearly meant something quite different in each case. He had analysed the returns in all sorts of ways. Representing them as curves, he found that the curves did not agree with one another, showing that, whatever overlapping there might be, there were in the main two distinct sets of facts. The curve of mortality from phthisis for forty years past was approximately a straight line, whereas the curve of mortality from diseases of the lungs was an irregular one, rising and falling year by year. In justice to himself and to the registrar-general's office, he wished to impress upon the meeting that the figures he had given might be relied on. He had made a graphic representation of the death-rates from a great number of causes for over forty years, and compared them two and two together. One evening after so comparing a number of curves for about an hour, he could not find the slightest resemblance between any of them, when suddenly he found that two agreed in a most remarkable manner.

These two curves were for "apoplexy" and "mortification." It did not appear on the face of it that there was much connection between these, but he asked himself what was the cause of apoplexy and what was the cause of mortification. In both cases it was disease of the arteries, which in one instance prevented the proper circulation of blood, and in the other led to the rupture of an artery. The curves for cold winters and for these two diseases agreed. In cold winters there was greater blood pressure, resulting (where the arteries were diseased) in stagnation in the extremity, or in rupture of an artery of the brain. The connection thus shown between two causes from which comparatively so few died, showed that there must be some truth in the registrar-general's returns. With regard to the matters to which Mr. Lawson called attention, he had elsewhere stated that the statistics of pneumonia had some sort of resemblance to those of phthisis, but not a very close one. Pneumonia occupied a sort of intermediate position between phthisis and bronchitis. Mr. Humphreys had very truly said that people had not tried to stop measles and whooping cough to a great extent. The credit of saying that lives between 25 and 35 were of special value, was due to Dr. Farr, who first called attention to it.

In conclusion, he thanked all present for the very kind way in which his paper had been received.

English Express Trains *in* 1871; *and a* Comparison *between them and those of* 1883.

By H. B. Willock, Esq., *Lieut. R.E.*

[Read before the Statistical Society, 22nd April, 1884. The President, Robert Giffen, Esq., LL.D., in the Chair.]

English Express Trains in 1871.

At the conclusion of Mr. Foxwell's interesting and valuable paper on English Express Trains (*Journal of the Statistical Society*, September, 1883), he observes that the figures would be more interesting if we had a history of them for several decades past, so that we might see the record of growth.

The writer of this paper has therefore ventured to draw up statistics of the express trains in England for the year 1871, and to compare them in the most important points with the similar statistics for 1883, drawn up by Mr. Foxwell; as a slight instalment to the history of our railways.

The year 1871 has been chosen, because it was before third class passengers came generally into express trains (the Midland brought them in in April, 1872), and therefore affords a better comparison between the past and present state of affairs, than if 1873 had been chosen, by which time third class passengers were carried by the bulk of the express trains of most of the large companies.

The statistics have been worked out for the month of July, so that as fair a comparison as possible may be made; they have also been arranged, as far as practicable, in the same manner as those in the paper alluded to, so that the reader can readily make comparisons between particular points, which for the sake of brevity have not been done.

Mr. Foxwell's definitions of "journey-speed," and "running-"average" have consequently been adopted; "journey-speed" being used to denote the average number of miles per hour, stoppages included, by which a train advances on its journey; whilst "running-average" is the average speed per hour while actually in motion, *i.e.*, the average speed excluding stoppages.

The statistics for 1883 drawn up by Mr. Foxwell are all derived from the working time tables of the various companies,

and hence to make an absolute and direct comparison between the two years, the figures given in this paper should have been derived from a similar source; but it appeared to be very difficult, if not impracticable to obtain the working time tables of all the companies for a time so long gone by as July, 1871, and therefore the principal source from which the materials for this paper have been derived is a Bradshaw of that time.

The distances have been taken as a rule from Mr. Foxwell's paper, altered where necessary, as in some cases the expresses do not run now over exactly the same ground as they did in 1871. The working time tables of subsequent years have often been drawn upon for information on various points, notably that of stoppages at ticket platforms (in some cases where particular trains have not been altered, a working time table of 1874-75 may really give all possible information about a train which ran in 1871), and in many cases the writer's own local knowledge proved to be useful.

The times of arrival and departure as given in Bradshaw have been taken as the correct ones, except in one or two instances, where there was reason to believe that they were not those really adhered to in working.

Thus it may be conceded that the distances and the total lengths of time in transit, and consequently the journey-speeds, are absolutely correct, and that the only source of error introduced by the writer's method of obtaining his figures is that the number of minutes stopped *en route* may occasionally be either slightly under or over estimated, and that thus the running-average may be in some cases only approximately correct.

Every possible care has however been taken to eliminate this source of error, and it is believed that the total amount of error is very small, and not sufficient to invalidate the general results, or to detract from their interest. In the worst cases the error introduced would not appear to affect the running-average more than 0·5 or 0·6 of 1 mile per hour; and where particular runs from one station to another are mentioned it is believed that this error is entirely absent.

It has been considered necessary thus to show how the figures for 1871 have been obtained, and to point out that they are only approximately and not absolutely correct: whilst those for 1883 may be taken as absolutely correct; so that there may be no danger of drawing unfounded inferences from the comparison of the two sets of results.

The writer however believes that for the purpose of practical comparison between the expresses of 1871 and those of 1883 this method of obtaining the figures is sufficiently accurate. This is

also the opinion of Mr. Foxwell, which he has been kind enough to allow the writer to quote here.

Definition of an Express.

Before considering in detail the express trains on the different railways, we must define what description of train can be considered as "express," or, in other words, "to what standard of journey-"speed a train must attain" to be classified as express.

Mr. Foxwell's standard (which is made for him by the trains themselves) in 1883 is:—

Express in 1883	A train whose journey-speed		
	j.s. = 40 miles per hour at least		when gradients and stoppages are ordinary
	,, = 39	,,	when stoppages are extraordinary
	,, = 36	,,	when gradients are extraordinary

and hence it would appear desirable that we should maintain for the purpose of ready comparison, the same standard for 1871.

Now if this standard were taken for 1871, there would be only about 12 per cent. of the trains then called express represented. But Mr. Foxwell's standard includes "nearly the whole of the "distinctly fast trains of the present day;" and to include similarly most of the distinctly good trains of the year 1871, we must alter the standard to:—

Express in 1871	A train whose journey-speed		
	j.s. = 36 miles per hour at least		with ordinary gradients and stoppages
	,, = 32	,,	with extraordinary gradients

Even with this low standard (viz., 36 miles per hour) certain trains which were considered expresses have to be omitted; thus the up day East Coast Scotch express had a journey-speed of only 34·2 miles per hour from Berwick to York. At the same time it appears that a standard of 36 miles per hour includes *nearly all the good trains which the companies themselves designated as express;* and this is undoubtedly the proper test of what should be called an express.

In order to avoid altogether excluding such trains as the East Coast one referred to, in some cases the time from one large town to another has been considered as a complete journey, *e.g.*, Newcastle to York; as a train might be express from Berwick to Newcastle, and from Newcastle to York, but a long stoppage of 12 to 15 minutes at Newcastle prevents its being express from Berwick to York. This course has however only been adopted in a few cases (6 on the North Eastern and 3 on the Great Western); and then only from one large town to another, and not from one junction to another.

Now it must be borne in mind that the mere increase, shown by the following tables, in the number and average speed of expresses since 1871 does not give anything like an adequate idea of the *whole improvement* which has taken place in the twelve years :—

(*a.*) For the weight of the average express has increased very greatly; sometimes quite doubled; on an average perhaps two-thirds as heavy again.

(*b.*) Also the number of goods and mineral trains, through which these expresses have to make their way, has increased quite as much; in short, as Mr. Foxwell says, "each mile of speed above "40 miles an hour represents now twice as good a performance as "then."

As to what caused the great increase in length and weight of trains it is evident the order was :—

(1.) The Midland obtained access to London by its own line.
(2.) The Midland in 1872 admitted third class passengers into express trains.
(3.) Other companies soon did the same.
(4.) Hence much longer trains; and also as competition increased more commodious and consequently heavier carriages were introduced.
(5.) Then heavier and more powerful engines had to be constructed to draw these trains, and were made directly.
(6.) This spur to locomotive improvement made still higher speeds (even with the increased weight of trains) possible, and competition eagerly seized this possibility.

The total number of distinct trains in 1871 examined and classified in this paper is 250: of which the speed is given in the following table :—

TABLE I.

Journey-Speed in Miles per Hour.	Number.	Per Cent.
Under 36	25	10·0
Between 36 and 37	74	29·6
„ 37 „ 38	58	23·2
„ 38 „ 39	36	14·4
„ 39 „ 40	28	11·2
„ 40 „ 41	13	5·2
„ 41 „ 42	4	1·6
„ 42 „ 43	6	2·4
„ 43 „ 44	1	0·4
„ 44 „ 45	3	1·2
„ 45 „ 46	2	0·8
Total	250	100·0

These trains are distributed between the various companies as shown below :—

TABLE II.

Name of Railway.	Speed.											Total.
	Under 36.	36 to 37.	37 to 38.	38 to 39.	39 to 40.	40 to 41.	41 to 42.	42 to 43.	43 to 44.	44 to 45.	45 to 46.	Number on each Line.
London and S. Western	—	2	3	–	–	2	–	–	–	–	–	7
Brighton and S. Coast....	—	–	4	1	2	4	–	1	–	–	–	12
South Eastern	—	1	4	6	–	–	–	3	1	–	–	15
Chatham and Dover	—	2	–	–	3	–	–	–	–	1	–	6
Great Eastern	—	2	–	–	–	–	1	–	–	–	–	3
„ Western.....	—	18	3	1	2	–	–	–	–	2	2	28
„ Northern	—	3	6	8	8	2	3	1	–	–	–	31
Midland	—	7	11	5	6	2	–	1	–	–	–	32
North Western	—	17	18	5	3	2	–	–	–	–	–	45
Manchester, Sheffield, and Lincolnshire	7	4	–	–	–	–	–	–	–	–	–	11
North Eastern	—	8	7	7	4	1	–	–	–	–	–	27
Glasgow and S. Western	4	–	–	–	–	–	–	–	–	–	–	4
North British	4	10	–	–	–	–	–	–	–	–	–	14
Caledonian	10	–	2	3	–	–	–	–	–	–	–	15
Totals	25	74	58	36	28	13	4	6	1	3	2	250

From this table it will be seen that if the 39—40 mile per hour standard had been maintained, such a line as the London and North Western would only be credited with five express trains.

Having now defined what an express train was in 1871, viz., one whose journey-speed was at least 36 miles per hour, unless it had exceptional difficulties to contend against, we will examine each railway in turn, and give :—

1. The number of distinct express trains ran by it, and the average of their—

(*a.*) Times on journey.
(*b.*) Journey-speed (j.s.).
(*c.*) Number of minutes stopped on road.
(*d.*) Running-average (r.a.).

2. The total express mileage.

3. The resulting express service between London and the chief towns on the line, and the average times and speeds of those journeys.

4. Long runs of at least 40 miles, stating the longest and quickest.

5. And where necessary the particulars of the best express.

And all of these will be compared with what was the case in 1883, and the improvements noted.

Afterwards a summary of results will be given, and also compared with the similar results of 1883.

And it should be remembered that in making these comparisons we are, as a general rule, comparing trains in 1871 with journey-speeds as low as 36 miles an hour, with trains in 1883, 85 per cent. of which have journey-speeds of at least 40 miles per hour.

The companies which ran expresses have already been enumerated; and we will now commence in the South of England and work northwards, where, in the Lancashire and Yorkshire district, we shall find the greatest improvements have been effected.

LONDON AND SOUTH WESTERN.

Distinct Expresses.

Miles.	Between	Number.	Average Time.	Journey-Speed.	Average Minutes Stopped.	Running-Average.	Total Mileage.
			H. M.				
171½	Waterlow and Exeter	2	4 16	40½	14	42½	—
83½	,, Salisbury	2	2 19	36	8	38⅓	—
47¾	,, Basingstoke	3 (1 up)	1 18	36 7/10	1	37 2/10	—
1871	Total	7	averaging	38 3/10	—	40	653
'83	,, ...	3	,,	41⅙	—	44⅓	*890

* Includes long runs of fast trains.

These seven trains were the only expresses on the line in 1871.

Express Service to Chief Towns.

Miles.	Between	Number.		Average Time.		Journey-Speed.		Running-Average.	
		1871.	1883.	1871.	1883.	1871.	1883.	1871.	1883.
				H. M.	H. M.				
171½	London and Exeter	2	3	4 16	4 10	40⅓	41⅙	42½	44⅓
83½	,, Salisbury	4	4	2 9	2 3	39 6/10	40¾	40 7/10	43
47¾	,, Basingstoke....	7(3 up)	13	1 15	1 8½	38 2/10	41⅘	39 2/10	43
The quickest trains to certain towns are—									
73½	London and Portsmouth....	up	up	2 5	1 55	35¼	38½	—	—
79	,, Southampton	down	down	2 21	2 4	33 6/10	38¼	—	—
115½	,, Bournemouth	,,	,,	3 50	3 9	30 1/10	36⅔	—	—
145½	,, Weymouth	,,	,,	4 45	4 –	30⅗	36⅓	—	—

Long Runs.

2 Exeter and Yeovil.
4 Waterloo and Basingstoke.
3 Basingstoke and Vauxhall.
2 Salisbury and Yeovil (only 39½ miles).

Total 1871. 11 averaging 46 miles at 40 r.a.
„ '83. 13 „ 47⅓ „ 44⅜ „

Longest.

1871. Yeovil to Exeter 48½ miles in 68 minutes = 42$\frac{8}{10}$ r.a.
'83. „ 48½ „ 63 „ = 46⅕ „

Quickest in

1871. Basingstoke to Vauxhall 46¼ miles in 64 minutes = 43⅓ r.a.
'83. Already given.

Best Express.

		H.	M.		
1871.	2·10 London to Exeter in	4	15,	j.s. = 40⅗,	r.a. = 42½.
'83.	2·30 „	4	3,	„ = 42⅓,	„ = 45.

It will be seen that the improvement on this line is not great. The number of expresses in 1871 is actually greater than now, but three of them are only portions of Southampton trains. The Exeter expresses have been quickened; Bournemouth and Weymouth are much better off now than in 1871, although they are still without an express; but Southampton and Portsmouth are still very poorly served.

The long runs are about the same length, but the increase in their number is very slight; the increase in their speed is considerable.

LONDON, BRIGHTON, AND SOUTH COAST.

Distinct Expresses.

Miles.	Between	Number.	Average				Total Mileage.
			Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	
			H. M.				
50½	Lond. Bridge and Brighton	6 (2 up)	1 16	39$\frac{8}{10}$	3	41½	—
85½	London Bridge and Portsmouth	2	2 12	38$\frac{8}{10}$	10	42½	—
50	London Bridge and Lewes	2	1 20	37½	5	40	—
56	Three Bridges and Portsmouth	2 (down)	1 27	38$\frac{6}{10}$	6	41½	—
1871	Total	12	averaging	38$\frac{8}{10}$	—	41½	686
'83	„	13	„	41	—	41⅔	1,155*

* Includes long runs of fast trains.

Express Service to Chief Towns.

Miles.	Between London and	Number.		Average Time.		Journey-Speed.		Running-Average.	
		1871.	1883.	1871.	1883.	1871.	1883.	1871.	1883.
				H. M.	H. M.				
$50\frac{1}{2}$	Brighton	6	8	1 16	1 13	$39\frac{5}{10}$	$41\frac{4}{7}$	$41\frac{1}{2}$	42
50	Lewes.....	2	4	1 20	1 15	$37\frac{1}{2}$	40	40	$40\frac{2}{3}$
				Quickest					
$65\frac{1}{2}$	Eastbourne	none	3	1 55	1 38	$34\frac{1}{10}$	40	—	41
$85\frac{1}{2}$	Portsmouth	4(1 up)	none	2 20	—	$36\frac{6}{10}$	—	$39\frac{4}{10}$	—

Long Runs—

5 Croydon and Brighton.
2 Three Bridges and Chichester.

1871. Total.... 7 averaging 40 miles at $42\frac{6}{7}$ r.a.

'83. „ .... 23 „ $45\frac{1}{2}$ „ 42 „ { or at $43\frac{1}{2}$ r.a. beyond Croydon, which makes a fairer comparison

Quickest—

1871. Croydon to Brighton ..... $40\frac{1}{2}$ miles, in 54 minutes = $44\frac{4}{10}$ r.a.
'83. London Bge. to Brighton, $50\frac{1}{2}$ „ 65 „ = $46\frac{2}{3}$ „

Here we see a very small increase in the number of distinct expresses, but there is a considerable increase in the journey-speeds; the running-average shows scarcely any increase.

The reason for this is that formerly all the expresses stopped at Croydon, for the Victoria portion to be attached or detached, and some at Redhill or Three Bridges in addition; whereas now none stop at either of the two latter places, and a good many do not stop at Croydon: the City and the West End being served by separate trains.

The actual service of express trains to Brighton does not show a very great improvement; but the total service, taking express and fast trains, has increased from ten trains to sixteen trains. The quickest train to Brighton in 1871 took 1 hour 15 minutes, stopping at Croydon; the quickest now takes 1 hour 5 minutes, without any stop. The decrease of 10 minutes, raising as it does the journey-speed from $40\frac{2}{5}$ to $46\frac{2}{3}$, is as much as can be expected.

The service to Eastbourne and Lewes was very small, and has been greatly improved, as now there are numerous fast trains besides the expresses enumerated above.

The Portsmouth service in 1871 was express, which it is not now. The quickest train then took 2 hours 10 minutes, whereas the quickest now takes 2 hours 21 minutes.

The number of long runs shows a surprising increase, and the speed a slight one.

The service generally on this line shows a considerable improvement, both in number of trains and punctuality, and also in the quality of the rolling stock.

SOUTH EASTERN.

Distinct Expresses.

Miles.	Between	Number.	Average Time.	Average Journey-Speed.	Average Minutes Stopped.	Average Running-Average.	Total Mileage.
			H. M.				
74½	Cannon St. and Dover	4	1 45	42 3/5	—	42 3/5	—
68¼	„ Canterbury....	6	1 46	38 9/7	4	40 1/8	—
59½	„ St. Leonards.	1 (down)	1 37	36 8/10	6	39 2/10	—
33	„ Tunbridge Wells	2	– 52	38	2	39 3/5	—
54	„ Ashford	2	1 28	37 1/10	3	38 1/10	—
1871	Total	15	averaging	39 4/10	—	40½	941
'83	„	12	„	41 1/8	—	41 3/4	940

The express service to the chief towns in 1871 is fairly represented above.

Long Runs—

4 Cannon St. and Dover.
6 New Cross and Canterbury.

1872. Total.... 10 averaging 68 miles at 40⅘ r.a.
'83. „ .... 12 „ 66¼ „ 42⅓ „

The longest and quickest in 1871 was from Cannon Street to Dover in 1 hour 39 minutes = 45 r.a., exactly the same as now.

The improvement on this line is greater than the above figures would seem to show; the express mileage remains the same, but the service to the continent has been greatly improved.

The six trains to Canterbury are the summer seaside trains to Ramsgate; similar ones run now at about the same speed, but of course are no longer expresses; if we deduct their mileage, viz., 409, from the 1871 figure, we should find that the express mileage has increased 408 miles, which is very considerable.

The four continental mails ran in 1871 exactly in the same time as they do now, and are certainly very fine trains; in 1871 only five trains (three of these broad gauge) in all England were faster, and only three others of about the same speed.

Two extra continental trains now run *viâ* Dover, and also the two tidals trains *viâ* Folkestone. In 1871 the special tidal trains only ran on certain days, the passengers being conveyed by the ordinary trains when their times suited. The improvement of

this tidal train service between London and Paris is undoubtedly very great, amounting to 1½ hours decrease of time at least.

The time to St. Leonards shows a decrease of 5 minutes, and an increase in journey-speed of about 2 miles per hour, on a very hilly road. The quickest time to Ramsgate is 22 minutes less than formerly.

It should be observed that on short lines like this and the other Southern Railways there is not much occasion to increase the speeds to a high figure as on the longer lines. If the speed of the continental trains were increased 5 miles per hour, to 47⅔ miles per hour, which is a very high speed, there would only be a saving of 10 minutes in the time to Dover; whilst on a long journey of 400 miles, *e.g.*, to Edinburgh, an increase of speed from 40 to only 43 miles per hour decreases the time on journey 42 minutes, which is really worth saving.

LONDON, CHATHAM, AND DOVER.

Distinct Expresses.

Miles.	Between	Number.	Average				Total Mileage.
			Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	
			H. M.				
78	Victoria and Dover	6	2 –	39	8	41¾	468
1871	Total	6	averaging	39	—	41¾	468
'83	„	9	„	42	—	43⅛	690

Express Service to Chief Towns.

Miles.	Between London and	Number.		Average					
				Time.		Journey-Speed.		Running-Average.	
		1871.	1883.	1871.	1883.	1871.	1883.	1871.	1883.
				H. M.	H. M.				
79	Ramsgate.....	1 up	2	2 12	2 –	36	39½	39½	42⅓
78	Dover	6	7	2 –	1 52	39	41¾	41¾	43
61¾	Canterbury	4	4	1 36	1 28	38 6/10	42	41⅙	43⅓
34	Chatham	5 (2 up)	3	– 52	– 51	39⅕	40	40	41⅔

Long Runs.

		1	Herne Hill to Dover.
		1	„ Faversham.
		1	„ Sittingbourne.
1871.	Total....	3	averaging 54 miles at 42 7/10 r.a.
'83.	„	8	„ 63 „ 45 „

Longest and Quickest.

1871. Herne Hill to Dover in 1 hour 36 minutes = $46\frac{1}{4}$ r.a.
'83. Quickest, the same.
Longest, Victoria to Dover at $44\frac{3}{5}$ r.a.

The six expresses given above in 1871 comprised the four continental mails and the morning up from, and afternoon down to Dover. These two Dover trains are slightly slower now than they were in 1871. The four continental mails run now almost exactly as in 1871. Two other continental trains, one up and one down, have been added about two years ago.

The company has also started a fast train each way to Ramsgate (the Granville express).

This line, like the South Eastern, ran in 1871 fast seaside trains to Margate and Ramsgate, but they were not express for any part of their journey.

The best train on the line was the 7.40 a.m. to Dover, which runs now exactly as it did then. In 1871 it was the quickest train in England except the two Flying Dutchman trains (broad gauge) on the Great Western; these also have not been altered in the twelve years. Two other trains on the Great Western, one broad gauge and one narrow, were almost as quick as the Chatham one.

Generally on this line there has been an increase in the number of fast trains, but no increase in their speed. In the table of distinct expresses the journey-speed is lower in 1871 than in 1883, because the two Dover trains are included in the former year; whereas for 1883 only continental trains are shown, the Dover trains having ceased to be express; excluding these the journey-speeds would be about the same in both years.

GREAT WESTERN.

Distinct Expresses.

Miles.	Between	Number.	Average				Total Mileage.
			Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	
			H. M.				
194	Paddington and Exeter	2	4 15	$45\frac{3}{4}$	23	$50\frac{1}{3}$	—
$118\frac{1}{2}$	,, Bristol	7 (4 up)	3 15	$36\frac{1}{2}$	23	$41\frac{3}{10}$	—
77	,, Swindon ...	1 up	1 45	44	5	$46\frac{1}{5}$	—
$75\frac{1}{2}$	Exeter and Bristol	2	2 5	36	10	$39\frac{4}{10}$	—
171	Paddington and Shrewsbury .	3 (1 up)	4 40	$36\frac{6}{10}$	28	$40\frac{6}{10}$	—
$129\frac{1}{4}$	,, Birmingham	5 (3 ,,)	3 24	38	14	$40\frac{8}{10}$	—
63	,, Oxford	1 down	1 45	36	5	$37\frac{4}{5}$	—
36	,, Reading	6 (4 up)	– 58	$37\frac{1}{5}$	2	$38\frac{6}{10}$	—
$44\frac{1}{2}$	Gloucester and Newport.....	1 down	1 10	$38\frac{1}{7}$	2	$39\frac{3}{10}$	—
1871	Total	28	averaging	38	—	$41\frac{4}{5}$	2,928
'83	,, ...	18	,,	42	—	$46\frac{1}{4}$	2,600

Express Service to Chief Towns.

Miles.	Between London and	Number.		Average Time.		Journey-Speed.		Running-Average.	
		1871.	1883.	1871.	1883.	1871.	1883.	1871.	1883.
				H. M.	H. M.				
246½	Plymouth	2	4	6 12	6 7	39 7/10	40⅓	44½	45¼
				Quickest					
228	Birkenhead ..	none	2	7 –	5 16	32⅘	43½	—	46
220	Torquay.....	2	4	5 32	5 21	40	41	46 3/10	47
				Quickest					
213	Chester	none	2	6 10	4 57	34½	43	—	46½
194	Exeter	2	4	4 15	4 15	45⅔	45¾	50¼	50¼
171	Shrewsbury ..	3 (1 up)	2	4 40	3 53	36 6/10	44	40 6/10	46½
				Quickest					
170½	Cardiff	none	1	4 58	4 21	34⅖	39½	—	43⅓
129¼	Birmingham	8	4	3 19	2 56	38 9/10	44	41 7/10	46
120	Worcester	2	1	3 20	2 58	36	40½	40	45
118½	Bristol	9 (5 up)	10	3 6	2 49	38 2/10	42	43	46½
114	Gloucester....	2	1	3 5	2 53	37	39½	41½	43
106¾	Bath	9 (5 up)	10	2 45	2 30	38 9/11	42⅔	42 7/10	46⅗
77	Swindon.....	8 (5 „)	13	1 47	1 41	43⅙	46	45 3/10	47⅔
63	Oxford	9 (4 „)	5	1 36	1 28	39⅓	43⅓	42	44⅓
					Quickest				
122½	Cheltenham .	none		3 30	3 15	35	37⅔	—	—
168	Weymouth ...	„		5 15	4 20	32	38¾	—	—
216	Swansea.....	„		6 35	6 –	32¾	36	—	—
285½	Milford	„		8 40	8 –	32 9/10	35⅝	—	—

Long Runs.

2 Paddington and Swindon.
2 Bristol and Taunton.
1 Reading and Swindon.
1 Didcot and Paddington.
4 Oxford and Leamington.
1 „ Paddington.

1871. Total.... 11 averaging 52 miles at 47¾ r.a.
'83. „ .... 24 „ 56 „ 48½ „

Longest and Quickest, 1871 *and* 1883.

Paddington and Swindon, 77 miles, in 1 hour 27 minutes = 53⅛ r.a.

The best train in 1871 was the 11.45 Paddington to Exeter, the Flying Dutchman, j.s. = 45¾, r.a. = 50⅓. This train runs in exactly the same time now, and is also the best train at the present time.

The best train on the northern section was the 7.30 a.m. Birmingham to Paddington; time 2 hours 55 minutes, j.s. = $44\frac{2}{10}$, r.a. = $45\frac{9}{10}$. This train also runs in exactly the same time now.

These results appear at first sight to indicate that very little progress has been made on the line: the express mileage being actually 328 miles less in 1883 than in 1871; but in reality a good deal of improvement has been made. On studying the tables of distinct expresses and of express service, it will be seen that the running-average has increased about $4\frac{1}{2}$ miles per hour, to $46\frac{1}{4}$, a very substantial increase.

The express train service to Plymouth, Torquay, and Exeter has been doubled, although the time has remained about the same; but an increase of speed could hardly be expected, as it was then so very high.

Chester and Birkenhead possess an express service which they did not in 1871; to the latter place the decrease in time, 1 hour 44 minutes, is very great, the journey-speed having risen more than 10 miles per hour. To Bristol, the number of trains has only increased by one, but there is a very substantial increase in speed.

The express service to Oxford, Birmingham, and Shrewsbury shows a decrease in number of trains. This does not mean that trains have been taken off, but that the trains which were express in 1871, and enumerated above, are still running at about the same rate now as they did then, and cannot now be classified as express. Similarly, the six expresses between Paddington and Reading are all running now, but have ceased to be express.

The Great Western appears to be conservative, and not to like time table alterations unless absolutely driven to them. Still there has been good progress made on most parts of the line, except on the South Wales section: Cheltenham, Swansea, and Milford being still poorly served. There is a monopoly at each of these places.

The number of long runs has been doubled, and their average length slightly increased; the increase in their speed is not great, but then it was exceptionally high in 1871.

The Great Western run very good trains to places where there is competition, and it was the first company to attempt really high speed.

Great praise is due to it for the improvement in rolling stock, which is now as good as any in the kingdom.

GREAT EASTERN.

Distinct Expresses.

Miles.	Between	Number.	Average				Total Mileage.
			Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	
			H. M.				
$51\frac{1}{4}$	Bishopsgate and Colchester	1 down	1 15	41	—	41	—
55	Bishopsgate and Cambridge	2	1 : 30	$36\frac{3}{3}$	3	$37\frac{9}{10}$	—
1871	Total	3	averaging	$37\frac{9}{10}$	—	$38\frac{8}{10}$	161
'83	„	34	„	41	—	$43\frac{1}{4}$	3,040

Service to Chief Towns.

Miles.	Between London and	Number.		Average Time.		Journey-Speed.	
		1871.	1883.	1871.	1883.	1871.	1883.
				H. M.	H. M.		
$123\frac{1}{2}$	Norwich *viâ* Ely	None	1	Quickest 3 53	3 10	$31\frac{8}{10}$	$39\frac{1}{6}$
$113\frac{1}{2}$	„ Ipswich	„	None	Quickest 3 35	3 4	$31\frac{4}{7}$	$37\frac{1}{6}$
121	Yarmouth	„	„	Quickest 3 45	3 21	$32\frac{3}{10}$	$36\frac{1}{4}$
$68\frac{1}{4}$	Ipswich	1	8	1 52	1 43	$36\frac{1}{2}$	40
$51\frac{1}{4}$	Colchester	1	13	1 15	1 13	41	$42\frac{1}{4}$
55	Cambridge	2	17	1 30	1 20	$36\frac{2}{3}$	$41\frac{3}{4}$

The line to Lincoln and Doncaster was not opened in 1871.

Long Runs.

1871. 1 of $51\frac{1}{4}$ miles at 41 r.a.
'83. 24 averaging $56\frac{3}{4}$ „ $42\frac{1}{2}$ „

This line has, as will be seen from the above figures, undergone a most wonderful change. It has built a splendid station in London, vastly improved its road and rolling stock, and has inaugurated a good service of express trains.

In 1871 it was in a most deplorable condition; the train service to the principal towns was wretched. The trains shown above to Norwich and Yarmouth were by far the quickest to those places; for example, the next quickest train to Yarmouth to that shown above took 4 hours 35 minutes, with a journey-speed of under 27 miles an hour.

Now this has all been changed, and Ipswich, Colchester, and Cambridge have all very good express services. The amount of its express mileage now (3,040 miles) is very great; and from being by far the worst express line it now takes a very high place indeed.

We now come to the great trunk lines to the North of England and Scotland, and we shall see that they have all made great progress in the past twelve years.

The Great Northern was then, as now, the first as regards speed; and the London and North Western first, in both years, as regards mileage.

A great improvement, especially to Scotland, took place in 1872 and 1873 on these lines, and improvements have since been made in the service to the chief towns almost every few months.

GREAT NORTHERN.

Distinct Expresses.

Miles.	Between	Number.	Average				Total Mileage.
			Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	
			H. M.				
188	King's Cross and York	9(4up)	4 49	39	19	41 6/10	—
185½	„ Leeds ..	6 (5 „)	4 43	39 3/10	26	43 3/10	—
138½	„ Retford	3 (1 „)	3 34	38 7/10	13	41 1/6	—
26	Hitchin and Cambridge	3 (1 „)	– 40	39	2	41	—
22¼	Nottingham & Grantham	10 (3 „)	– 35	38 1/10	2	40½	—
1871	Total	31	averaging	38 9/10	—	42	3,520
'83	„	67	„	43	—	46¾	6,780

Service to Chief Towns.

Miles.	Between London and	Number.		Average					
				Time.		Journey-Speed.		Running-Average.	
		1871.	1883.	1871.	1883.	1871.	1883.	1871.	1883.
				H. M.	H. M.				
203	Manchester	7 (4 up)	14	5 10	4 51	$39\frac{3}{10}$	$41\frac{5}{6}$	43	45
199	Stockport.....	7	7	5 17	5 3	$37\frac{7}{10}$	$39\frac{1}{2}$	42	44
197	Hull.....	5 (3 up)	3	5 14	4 56	$37\frac{6}{10}$	40	$41\frac{7}{10}$	$44\frac{3}{4}$
193	Bradford	9 (5 „)	9	5 3	4 35	$38\frac{2}{10}$	42	$42\frac{7}{10}$	$46\frac{1}{2}$
188	York.....	11 (5 „)	19	4 53	4 20	$38\frac{1}{2}$	$43\frac{2}{5}$	$41\frac{1}{2}$	$46\frac{2}{5}$
$185\frac{1}{2}$	Leeds	10	13	4 44	4 21	$39\frac{2}{10}$	$42\frac{2}{3}$	$42\frac{8}{10}$	$46\frac{1}{4}$
162	Sheffield	10	17	4 –	3 40	$40\frac{1}{2}$	$44\frac{1}{3}$	$43\frac{1}{2}$	47
156	Doncaster	15 (9 up)	21	3 53	3 35	$40\frac{1}{5}$	$43\frac{1}{2}$	$43\frac{1}{3}$	$46\frac{2}{3}$
$130\frac{1}{4}$	Lincoln	3 (1 „)	6	3 28	3 11	$37\frac{1}{2}$	41	$42\frac{1}{4}$	$46\frac{1}{4}$
$127\frac{3}{4}$	Nottingham....	12 (4 „)	19	3 16	3 –	39	$42\frac{1}{2}$	$42\frac{3}{10}$	$46\frac{1}{2}$
$105\frac{1}{2}$	Grantham	19 (11 up)	36	2 33	2 17	$41\frac{3}{10}$	46	$43\frac{3}{10}$	$47\frac{3}{4}$
$76\frac{1}{4}$	Peterborough.	20 (11 „)	29	1 47	1 37	$42\frac{7}{10}$	47	$43\frac{1}{2}$	$48\frac{1}{10}$
58	Cambridge	4 (1 „)	7	1 31	1 21	$38\frac{2}{10}$	$42\frac{2}{3}$	42	45

Long Runs.

7 King's Cross and Peterborough.
1 „ Huntingdon.
1 Retford and York.
6 Peterborough and Holloway.
4 „ Hitchin.

1871. Total.... 19 averaging $66\frac{3}{4}$ miles at $44\frac{1}{2}$ r.a.
'83. „ .... 49 „ $73\frac{3}{4}$ „ 50 „

Longest and Quickest, 1871. King's Cross and Peterborough, $76\frac{1}{4}$ miles in 1 hour 37 minutes = 47 r.a.

Longest, 1883. King's Cross and Grantham, $105\frac{1}{4}$ miles, in 2 hours 4 minutes = 51 r.a.

Quickest, 1883. Grantham and Doncaster in 58 minutes = $52\frac{1}{4}$ r.a.

It will be seen from the above figures that in 1871 the Great Northern had a very good train service. All the trains to Manchester, Sheffield, and Leeds, and most of those to York and Nottingham, would even now be considered express; so that the great improvements which have been made on the line are all the more creditable to it.

The express mileage has increased 92 per cent., the average journey-speed $4\frac{1}{10}$ miles per hour, and the running-average $4\frac{3}{4}$ miles per hour. The long runs have increased in number by 30, or 158 per cent., and in speed by $5\frac{1}{2}$ miles per hour. It will also be noticed that their average length has increased. Now a good many trains do not stop at Peterborough, Retford, and Doncaster, whilst in 1871 all stopped at Peterborough and Retford, and only one did not stop at Doncaster.

In the service to chief towns we see an enormous increase in the number of expresses to Manchester, to which place the

competition is very keen. The increase in speed is not so marked, as the Manchester, Sheffield, and Lincoln line is so very steep, and the running on it in 1871 so good, that any improvement, without decreasing the number of stoppages, was difficult. The increase in average journey-speed is principally caused by the new $4\frac{1}{2}$ hours special expresses, which make only two stops. We shall refer to the Manchester service further on.

The York service shows a marked improvement, both in number of trains and in speed. To Leeds the increase in speed is very considerable; the number of trains has not so largely increased; but then the service in 1871 was a very good one. Nottingham and Sheffield are also much better off: at both these places there is an active competition with the Midland; whilst to Hull, where there is no competition, the improvement is not so great.

We will now place side by side the best expresses of the Great Northern, Midland, and North Western, both in 1871 and 1883, for comparison.

1871	G.N. 2.45 P.M. London to Leeds.	MID. 8 A.M. Sheffield to London.	NORTH WESTERN. 7.15 A.M. down. Irish Mail.
	H. M.	H. M.	H. M.
Time	4 27	3 55	6 35 (as at present)
Journey-speed	$41\frac{3}{5}$	$40\frac{1}{2}$	$40\frac{1}{10}$
Running-average..	$44\frac{1}{2}$	$43\frac{1}{2}$	42

1883	G.N. 1.15 King's Cross to York.	MID. 10.0 London to Leeds.	NORTH WESTERN. 7.30 Birmingham to London.
	H. M.	H. M.	H. M.
Time	4 5	4 30	2 35
Journey-speed ...	46	$45\frac{1}{8}$	$43\frac{3}{4}$
Running-average...	$49\frac{1}{4}$	48	$46\frac{2}{5}$

The quickest train to York in 1871 took 4 hours 30 minutes, j.s. $41\frac{7}{9}$, r.a. $43\frac{7}{10}$, which may be compared with the above.

Note.—In Table II the Great Northern is credited with an express with journey-speed of over 42 miles per hour, which is apparently quicker than the one given above for 1871. It is however only the portion of a Manchester express (5 p.m.) between King's Cross and Retford. The one given above is the quickest from start to finish.

Similarly the Midland is credited with an express of over 42 miles per hour; this is a part of a Leeds express from Trent (where it leaves the Manchester train) to Leeds.

The quickest express on the Great Northern shows a very considerable advance in speed over 1871; so also does the Midland one. The advance on the North Western is not so marked.

MIDLAND.

Distinct Expresses.

Miles.	Between	Number.	Average Time.	Average Journey-Speed.	Average Minutes Stopped.	Average Running-Average.	Total Mileage.
			H. M.				
189	St. Pancras & Manchester.	8	5 5	37⅙	30	41¼	—
198	„ Leeds	2	5 15	37 7/10	36	42 6/10	—
99¼	„ Leicester	3 (1 up)	2 36	38⅝	10	40⅝	—
128¾	„ Derby	1 up	3 35	36 nearly	25	40 6/10	—
78	Trent and Leeds.....	5 (2 up)	2 –	39	8	41 7/10	—
38½	„ Sheffield	4 (3 „)	1 –	38½	2	39 5/10	—
36¼	Derby to Sheffield	6 (2 „)	– 58	37½	2	38 8/10	—
39½	Sheffield to Leeds	1 down	1 5	36⅓	4	38 9/10	—
20	Rugby to Leicester.....	2 „	– 30	40	—	40	—
1871	Total	32	averaging	37½	—	40 9/10	3,175
'83	„	66	„	41⅗	—	45	8,860

Service to Chief Towns.

Miles.	Between London and	Number. 1871.	Number. 1883.	Average. Time. 1871.	Time. 1883.	Journey-Speed. 1871.	Journey-Speed. 1883.	Running-Average. 1871.	Running-Average. 1883.
				H. M.	H. M.				
211½	Bradford	6	13	5 32	5 5	38 2/10	42 3/10	42 8/10	46
198	Leeds	6	15	5 3	4 37	39 2/10	43½	44	46⅔
158½	Sheffield	9 (5 up)	16	4 4	3 40	39	44⅛	42 8/10	47
189	Manchester	8	11	5 5	4 44	37⅙	40½	41¼	44⅔
183¼	Stockport	8	11	5 3	4 32	36¼	40¼	41	44⅔
128¾	Derby	10	15	3 20	3 1	38 6/10	42½	42 2/10	46½
—	„ viâMelton	—	6	—	3 21	—	41	—	
126½	Nottingham	9	16	3 17	2 46	38½	44 8/10	42	47⅔
99¼	Leicester	17 (8 up)	20	2 30	2 14	39 7/10	41½	42	47
49¾	Bedford.....	14 (6 up)	17	1 14	1 8	40 3/10	44	42	45½

Long Runs.

1 St. Pancras and Bedford.
7 Kentish Town and Bedford.
3 „ Leicester.
4 Bedford and Leicester.
5 Derby and Woodley Junction.

1871. Total.... 20* averaging 56¾ miles at 42¾ r.a.
'83. „ 104† „ 53 „ 46½ „

Longest Run.

H. M.
1871. Kentish Town to Leicester, 97½ miles, in 2 8 = 45¾ r.a.
'83. St. Pancras to Leicester, 99¼ „ 2 7 = 47 „

* 7 of these have conditional stops.
† 16 „

Quickest Run.

H. M.

1871. Kentish Town to Bedford, 48 miles in 1 1 = 47$\frac{1}{5}$ r.a.
'83. Liverpool to Stockport, 37$\frac{3}{4}$ miles, at 50$\frac{1}{3}$ r.a.
And St. Pancras to Kettering, 72$\frac{1}{4}$ miles, at 49$\frac{4}{5}$ r.a.

On this line there has been very great progress. The number of expresses has been more than doubled, the average journey-speed is 4 miles per hour greater, and the mileage has increased 147 per cent. The number of long runs has increased 400 per cent., and their speed by 3$\frac{3}{4}$ miles per hour. Of course a large proportion of this increase is due to the opening of new lines on which expresses are run. Thus the opening of the Cheshire lines to Liverpool has given a batch of expresses; the Settle and Carlisle line, making the Midland a through line to Scotland, another (and this is perhaps the most important one); and the new line from Masborough to York, on which expresses are run. Then there is the Kettering and Manton line, on the opening of which the company started a new service to Nottingham and Leeds; this however is only an alternative route; and lastly it has started an express service from Bristol to Derby, none of the trains on which line came within the definition of express in 1871.

The service to some of the towns has been enormously increased; notably to Nottingham, Sheffield, Leeds, and Bradford.

The speed of the long runs in 1871 was extremely creditable; notably the run from Kentish Town to Bedford.

We will now compare the service of the Great Northern and Midland to Leeds in 1871 and in 1883.

	Great Northern.	Midland.
1871.	H. M.	H. M.
Quickest time	4 28	4 56
Journey-speed	41$\frac{3}{5}$	40$\frac{1}{7}$
Running average	44$\frac{1}{2}$	44
1883.	H. M.	H. M.
Quickest time	4 –	4 30
Journey-speed	46$\frac{2}{5}$	45$\frac{1}{3}$
Running-average	49	48
Total Service—		
1871.		
Number of trains	10	6
	H. M.	H. M.
Average time	4 44	5 3
„ journey-speed	39$\frac{9}{10}$	39$\frac{2}{10}$
Running-average	42$\frac{8}{10}$	44
1883.		
Number of trains	13	15
	H. M.	H. M.
Average time	4 21	4 37
„ journey-speed	42$\frac{2}{3}$	43$\frac{1}{3}$
Running average	46$\frac{1}{4}$	46$\frac{2}{3}$

This table shows the advantage of competition.

LONDON AND NORTH WESTERN.

Distinct Expresses.

Miles.	Between	Number.	Average				Total Mileage.
			Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	
			H. M.				
31½	Liverpool & Manchester	4 (1 up)	– 50	37⅘	3	40¼	—
263¾	Euston and Holyhead...	4	6 42½	39 3/10	19½	41⅓	—
299¼	,, Carlisle	6 (2 up)	8 3	37½	37	40¼	—
186½ / 189	,, Manchester	8	5 5	37 1/12	26	40½	—
193½	,, Liverpool...	1 up	5 20	36⅔	30	40	—
113	,, Birmingham	2	3 2	37¼	16	40 8/10	—
158	,, Crewe	4 (1 up)	4 16	37	20	40½	—
133½	,, Stafford	1 down	3 35	37¼	16	40¼	—
82¾	,, Rugby	1 up	2 10	38½	8	40⅔	—
46¾	,, Bletchley ..	5 (3 up)	1 15	37½	4	39½	—
60½	Stafford and Wigan	1 down	1 40	36 3/10	13	41 6/10	—
30	Rugby and Birmingham	6 (4 up)	– 49	36⅔	2½	37⅙	—
21¼	Crewe and Chester	2	– 35	36½	—	36½	—
1871	Total	45	averaging	37½	—	40⅓	6,273
'83	,, ...	82	,,	40⅔	—	43 7/10	10,405

Service to Chief Towns.

Miles.	Between London and	Number.		Average					
				Time.		Journey-Speed.		Running-Average.	
		1871.	1883.	1871.	1883.	1871.	1883.	1871.	1883.
				H. M.	H. M.				
299¼	Carlisle	6 (2 up)	7	8 3	7 28	37½	40	40¼	43½
209¼	Preston	7 (2 ,,)	8	5 28	5 6	38¼	41	41⅓	44½
193½	Liverpool	6	10	5 12	4 45	37½	40 6/7	40⅗	44¾
186½ / 189	Manchester	11 (5 up)	17	5 5	4 46	37½	39⅔	40½	43⅓
—	Stockport	11	17	10 minutes less		—	—	—	—
182¼	Warrington	8 (2 up)	12	4 46	4 33	38 2/10	40	41½	44¼
179	Chester	6 (2 ,,)	9	4 33	4 25	39⅓	40⅗	41½	44
163	Shrewsbury	2	3	4 27	4 3	36 6/10	40¼	40⅖	44⅔
158	Crewe.....	20	34	4 5	3 48	38 7/10	41⅔	41 2/10	44⅔
113	Birmingham ...	10	8	3 3	2 45	37	41⅖	40⅗	44¾
82¾	Rugby	27 (12 up)	50	2 4	1 57	40	42	41 7/10	44⅘
67½	Northampton ..	6 (1 ,,)	21	1 49	1 32	37 1/10	43	41⅓	44⅘
31½	Liverpool and Manchester....	4 (1 ,,)	20	– 50	– 45	37⅘	42	40¼*	45*

* Between Manchester and Edge Hill 43 5/10 47¾

Long Runs.

5 Euston and Rugby.
3 Willesden and Rugby.
1 Euston and Blisworth.
1 Camden and Blisworth.
4 Willesden and Blisworth.
2 Euston and Bletchley.
13 Willesden and Bletchley.
1 Watford and Blisworth.
8 Rugby and Stafford.
5 „ Crewe.
4 Chester and Holyhead.
3 „ Stafford.
2 Carlisle and Preston.
2 „ Carnforth.
2 „ Oxenholme.

1871. Total.... 56 averaging 60 miles at 41 r.a.
'83. „ .... 98 „ 60 „ 45 „
Of these in 1871 19 over 60 miles averaged 78 miles at $41\frac{1}{7}$ r.a.
„ '83 53 „ 72 „ 44 „

Over the Westmoreland Hills in

1871. 6 averaged 68 miles at $36\frac{1}{2}$ r.a.
'83. 12 „ $60\frac{3}{4}$ „ 43 „

Longest Runs.

			H.	M.		
1871.	Preston to Carlisle,	90 miles in	2	27 = $36\frac{7}{10}$	r.a.	Over steep gradients
	Holyhead to Chester,	$84\frac{1}{2}$ „	2	5 = $40\frac{1}{2}$	„	
'83.	Nuneaton to Willesden	$91\frac{1}{2}$ „	1	57 = 47	„	

Quickest.

			H.	M.	
1871.	Rugby to Stafford	$50\frac{3}{4}$ miles in	1	7 = $45\frac{1}{2}$	r.a.
'83.	Northampton to Willesden	$60\frac{1}{4}$ „	1	10 = $51\frac{3}{5}$	„

Quickest over Steep Gradients.

			H.	M.	
1871.	Carlisle to Carnforth	$62\frac{3}{4}$ miles in	1	33 = $40\frac{1}{2}$	r.a.
'83.	„	„	1	25 = $44\frac{1}{4}$	„

Up limited mail in both cases.

We will now give for comparison the best train to Liverpool in 1871 and 1883.

	Train.	Time. H.	Time. M.	Journey-Speed.	Running-Average.	
1871.....	2.45 P.M. down	5	0	$38\frac{7}{10}$	$41\frac{1}{3}$	to Edge Hill
'83.....		4	30	43	$46\frac{4}{5}$	

The increase in express mileage amounts to more than 65 per cent., the increase in journey-speed $3\frac{1}{6}$ miles per hour, and in running-average about $3\frac{1}{2}$ miles per hour.

The mileage of long runs has increased 75 per cent., and the speed by 4 miles per hour.

The increase in mileage is not so great as that of the Midland, but then no new lines on which express running is done (except the Northampton loop) have been opened in the twelve years; also the service in 1871 was a good one.

The speed in 1871 was not so great as that of either the Great Northern or the Midland, but having usually the shortest route to the towns at which there was competition, it was not necessary for the line to run so fast as its competitors.

In 1871 the North Western had a practical monopoly at Liverpool; now there is an active and keen competition there, and hence we see a great improvement in the service to this town from London, and also in the service from Manchester.

The service to this latter town has also been greatly improved; the competition to it being severer than ever.

The mails to Holyhead were the same in 1871 as now. These trains were decidedly very good ones when they were first put on, now they are relatively slow; but then the company has had no inducement to accelerate them.

Carlisle is much better off now than then; Crewe and Rugby have an enormous increase in their service. It will be seen that the proportionate increase in service to these two towns is much larger than to most other places; the reason being that now the traffic having become so heavy, it has been found necessary to run separate trains to each large place, instead of one train serving several by detaching a few carriages at the junction for each particular town. As a good example we instance the 10 a.m. express, which train in 1871 served Birmingham, Liverpool, Manchester, and all parts of Scotland; whilst at present the 10 a.m. serves Edinburgh, Glasgow, and Perth only; another train at 10.10 a.m. serves Liverpool and Manchester, one at 9.30 a.m. serves Birmingham, and a fourth at 11 a.m. goes to places in the north of Scotland.

To Birmingham the service has not improved so much as to most places. The average time is 18 minutes less, but the expresses are two less in number now than in 1871. However now there are several fast trains, which, though not express, only take a few minutes longer on the road than some of the trains which are classed as express.

Northampton has obtained great advantages by the opening of the new loop line, which places it on a main line instead of being as formerly on a branch.

We may now compare the best express of this company and of the Great Northern to Scotland both in 1871 and 1883. (It will be remembered that at the earlier time the Midland route to Scotland was not opened.)

East Coast Route.					West Coast Route.			
1871.								
8.10 p.m. down, King's Cross to					8.40 p.m. down Limited Mail.			
	Miles.	Time.	Journey-Speed.	Running-Average.	Miles.	Time.	Journey-Speed.	Running-Average.
		H. M.				H. M.		
Edinburgh	392½	9 55	39 6/10	41 8/10	400¼	10 33	37 9/10	40 7/10
Glasgow	439¾	11 40	37 7/10	41⅓	403¾	10 42	37 7/10	40⅕
1883.								
8.40 a.m. up from Glasgow.					10 a.m. down.			
Edinburgh	—	9 –	43⅗	48	—	9 50	40⅔	44⅔
Glasgow	—	10 20	42½	47	—	10 –	40⅐	44

These figures show a striking improvement. It should be remembered in comparing the journey-speeds that in 1871 the quickest trains by both routes were night ones, which had no long stoppages; and these are compared with day trains in 1883, which had long ones; viz., 30 minutes at York by the East Coast, and 20 minutes at Preston by the West Coast.

It should be noticed on the East Coast line that the journey-speed to Edinburgh in 1883 is nearly 2 miles per hour faster than the running-average was in 1871.

The distance to Glasgow by the West Coast line in 1871 was 2¼ miles longer than it is now: the trains running then *viâ* Coatbridge to Buchanan Street, and not by the direct line from Motherwell through Rutherglen to the Central station as at present.

MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE.

Distinct Expresses.

Miles.	Between	Number.	Average Time.	Average Journey-Speed.	Average Minutes Stopped.	Average Running-Average.	Total Mileage.
			H M.				
64⅓	Retford and Manchester	7 (4 up)	1 50	35 2/11	10	38 7/10	—
35¾	Barnsley „	4	– 59	36 3/10	3	38 3/10	—
1871	Total	11	averaging	36	—	38 4/7	594
'83	„	49	„	43	—	44 3/5	2,318

The express service to the chief towns from London has been given under the head of the Great Northern. There were no long runs in 1871.

Here we see an enormous increase in express mileage; but of this 1,096 miles are due to the present Liverpool and Manchester service on the Cheshire lines; still deducting this amount the express mileage would be 1,222 miles, and the increase 105 per cent. which is very large.

The speed of the ordinary expresses to Manchester was in 1871 very good indeed, so much so that the average time between Retford and Manchester has only been reduced $3\frac{1}{2}$ minutes, but the trains are heavier now than in 1871.

The expresses to Barnsley formed part of a through service from Manchester to York, the route lying from Barnsley to Normanton over the Midland, and thence by the North Eastern line.

We will here give the best expresses by all three routes between London and Manchester, and also the total service for 1871 and 1883.

	G. N. & M. S. & L.	Midland.	North Western.
Best Express, 1871.			
Train	6.45 A.M. up	10 A.M. down	2.45 P.M. down
	H. M.	H. M.	H. M.
Time	5 5	5 –	4 55
Journey-speed	$39\frac{9}{10}$	$37\frac{4}{5}$	$38\frac{2}{5}$
Running-average	44	$41\frac{1}{4}$	$41\frac{1}{5}$
Best Express, 1883.			
	H. M.	H. M.	H. M.
Time	4 30	4 35	4 30
Journey-speed	45	$41\frac{3}{4}$	42
Running-average	$46\frac{2}{3}$	$45\frac{1}{6}$	$45\frac{2}{3}$

Total Service.

	1871.	1883.	1871.	1883.	1871.	1883.
Number	7	14	8	11	11	17
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Average time	5 10	4 51	5 5	4 44	5 5	4 46
„ journey-speed	$39\frac{3}{10}$	$41\frac{5}{6}$	$37\frac{1}{6}$	$40\frac{1}{2}$	$37\frac{1}{2}$	$39\frac{2}{3}$
Running-average	43	45	$41\frac{1}{4}$	$44\frac{2}{5}$	$40\frac{1}{2}$	$43\frac{1}{3}$

Total number of trains 1871 26
„ '83 42

The improvement in this service, as will be seen from the above, is very great, although the service in 1871 was an excellent one.

The Great Northern & M. S. and L. are far to the front in both years as regards speed.

The journey-speed of the fastest train by all routes in 1883 is higher than their respective running-averages in 1871.

NORTH EASTERN.

Distinct Expresses.[1]

Miles.	Between.	Number.	Average. Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	Total Mileage.
			H. M.				
147	York and Berwick	2 down	3 48	$38\frac{7}{10}$	10	$40\frac{4}{10}$	—
$80\frac{1}{2}$	,, Newcastle	5 (2 up)	2 11	$36\frac{7}{10}$	6	$38\frac{1}{2}$	—
67	Newcastle and Berwick	3 (,,)	1 48	$37\frac{2}{10}$	3	$38\frac{3}{10}$	—
26	Leeds and York	4 (3 up)	– 40	39	2	41	—
54	,, Hull	2	1 28	$36\frac{8}{10}$	5	39	—
$42\frac{3}{4}$	York and Scarborough	2 up	1 10	$36\frac{6}{10}$	3	$38\frac{1}{4}$	—
$57\frac{1}{2}$	Edinburgh and Berwick	9 (4 up)	1 32	$37\frac{1}{2}$	3	$38\frac{7}{10}$	—
1871	Total	27	averaging	$37\frac{1}{2}$	—	39	1,711
'83	,, ...	19	,,	$40\frac{1}{2}$	—	$43\frac{1}{4}$	2,112

Service to Chief Towns.

Miles.	Between London and	Number. 1871.	Number. 1883.	Average. Time. 1871.	Time. 1883.	Journey-Speed. 1871.	Journey-Speed. 1883.	Running-Average. 1871.	Running-Average. 1883.
				H. M.	H. M.				
335	Berwick	2 down	6	8 37	8 1	$38\frac{8}{10}$	$41\frac{3}{4}$	$42\frac{2}{10}$	$45\frac{3}{4}$
$268\frac{1}{4}$	Newcastle	5 (1 up)	10	7 5	6 28	$37\frac{6}{10}$	$41\frac{1}{2}$	$41\frac{1}{9}$	46
$232\frac{1}{4}$	Darlington ...	6	11	6 17	5 43	$36\frac{9}{10}$	$40\frac{2}{3}$	$41\frac{1}{3}$	$45\frac{2}{3}$
$230\frac{3}{4}$	Scarborough.	1 up	8	6 25	5 42	36	$40\frac{1}{3}$	$39\frac{2}{3}$	$45\frac{5}{6}$

Long Runs.

1 Berwick and Edinburgh.
2 York and Newcastle.
1 Newcastle and Berwick.
3 York and Darlington.
1 York and Scarborough.*

1871. Total.... 8 averaging $57\frac{1}{2}$ miles at $39\frac{9}{10}$ r.a.
'83. ,, 20 ,, 56 ,, $44\frac{3}{5}$,,

* There are two other long runs between York and Scarborough, but their running-average is only $34\frac{1}{3}$.

Longest Run.

		H. M.	
1871.	York and Newcastle, 80¼ miles in	1 55 = 41 9/10	r.a.
'83.	„	1 42 = 47 1/5	„

Quickest Run.

		MIN.	
1871.	York to Darlington, 44¼ miles in	62 = 42 8/10	r.a.
'83.	„	53 = 50	„

It will be seen that the service on this line was not particularly good in 1871. The running-average speed is more than 1 mile below the average of all the lines in England. The up day Scotch train was forwarded so slowly that it failed to be express, the speed from Berwick to York being only 34·2 miles per hour. The number of expresses in 1871 is larger than in 1883. It has been previously noticed that on this line trains have been given as express from York to Newcastle, and from Newcastle to Berwick; thus making what now counts as one train, to count as two or even three distinct trains. The express service has increased, as the total mileage shows an increase of 23 per cent.

The speed of the trains has increased considerably, but it is still below the general running-average. The service to Scarborough has been very much improved, not only by quickening the trains, but by their fitting the Great Northern trains at York better, and curtailing the stoppage at that place.

We will refer to the Scotch service later on.

SCOTCH COMPANIES.

GLASGOW AND SOUTH WESTERN.

Distinct Expresses.

	Miles.	Between	Number.	Average				Total Mileage.
				Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	
				H. M.				
1871	125	Glasgow and Carlisle	4	3 42	33¾	20	37⅛	500
'83	115¼		8	2 46	41⅔	7	43½	922

Note.—Long runs in 1871 nil.

In 1871 this line could hardly be said to have an express service. The four trains given above ran in connection with the North Western; but that company works chiefly in conjunction with the Caledonian, so that these trains were chiefly intended to serve towns between Carlisle and Glasgow, and not so much as a through service from England to Glasgow.

The present good trains were put on when the Midland extended its line to Carlisle.

NORTH BRITISH.

Distinct Expresses.

	Miles.	Between	Number.	Average				Total Mileage.
				Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	
				H. M.				
1871	47¼	Edinburgh&Glasgow	10	1 17½	36½	4½	38 8/10	473
	98¼	„ Carlisle	4	3 8	31 3/10	16	34¼	393
								866
'83	—	Edinburgh&Glasgow	5	1 14	38⅓	—	41	825
	—	„ Carlisle	6	2 29	39½	—	41	

Long Runs.

1 Hawick and Carlisle.
1 Haymarket and Cowlairs.
2 Glasgow and Haymarket.

1871. Total .... 4, averaging 44½ miles at 38 1/7 r.a.
'83. „ .... 7 „ 60½ „ 40⅓ „

The remarks given above for the Glasgow and South Western apply similarly to this line as regards its Edinburgh and Carlisle service. That between Edinburgh and Glasgow has undergone very little change, and was relatively better in 1871 than it is now.

CALEDONIAN.

Distinct Expresses.

Miles.	Between	Number.	Average				Total Mileage.
			Time.	Journey-Speed.	Minutes Stopped.	Running-Average.	
			H. M.				
47¼	Edinbro' and Glasgow	6 (2 up)	1 19	35 9/10	5	38 3/10	—
104½	Carlisle and Glasgow..	1 down	2 55	35 8/10	10	38	—
101	„ and Edinbro'..	8 (3 up)	2 44	37	9	39 3/10	—
1871	Total	15	averaging	36½	—	38 6/10	1,196
'83	„	16	„	40⅕	—	42¾	1,156

Long Runs.

2 Carlisle and Beattock.
2 „ and Carstairs.
1 Carstairs and Lockerbie.

1871. Total .... 5, averaging 55 miles at 40½ r.a.
'83. „ .... 8 „ 59½ „ 45½ „

		H. M.	
1871.	Longest and Quickest .... Carlisle to Carstairs in	1 44	=42 r.a.
'83.	„ ..... „	1 35	=48½ „
'83.	Quickest ..... Carlisle to Beattock in	– 48	=49⅔ „

There is no increase of express mileage to show on this line, but there is a most marked increase in speed.

There are two fewer expresses between Edinburgh and Glasgow, but on the other hand there is an express service from Perth to Dundee, whereas formerly the trains stopped at nearly all the stations between those places. This service was started on the opening of the Tay Bridge, when the North British put on express trains from Glasgow to Dundee (these had to be discontinued when the bridge fell); Dundee then found the great advantage of having a competitive line.

We will now give the total express service between London and Scotland by the East Coast and West Coast lines in 1871, and compare it with the present service given by these companies. The quickest train to Scotland has already been given.

To and from Edinburgh.

Year.	East Coast Route.				West Coast Route.			
	Number.	Average			Number.	Average		
		Time.	Journey-Speed.	Running-Average.		Time.	Journey-Speed.	Running-Average.
		H. M.				H. M.		
1871.....	2 down	10 12	38½	41 7/10	3 (1 up)	10 42	37⅔	40 3/10
Also these fast	4 (3 up)	11 10	35 1/7	38 8/10	5 (2 „)	11 17	35½	39½
1883.....	6	9 31	41¼	45⅕	4	9 55	40⅓	44⅓
Also these fast	5	10 17	38	—	5	10 48	37	—

To and from Glasgow.

1871.....	1 down	11 40	37 7/10	41⅓	3 (1 up)	10 52	37⅓	40
Also these fast	5 (3 up)	12 51	34¼	39½	5 (2 „)	11 42	34½	38½
1883.....	3	10 35	41½	45⅘	4	10 2	40	43⅔
Also these fast	6	11 50	37	—	5	—	—	—

Taking Express and Fast together.

	Year.	Edinburgh.	Journey-Speed.	Glasgow.	Journey-Speed.
East Coast	1871	2 exp. + 4 fast	6 avge. $36\frac{2}{5}$	1 exp. + 5 fast	6 av. $34\frac{7}{10}$
	'83	6 „ + 5 „	11 „ $39\frac{3}{4}$	3 „ + 6 „	9 „ $38\frac{1}{2}$
West Coast	'71	3 „ + 5 „	8 „ $36\frac{1}{3}$	3 „ + 5 „	8 „ $35\frac{1}{2}$
	'83	4 „ + 5 „	9 „ $38\frac{1}{3}$	4 „ + 5 „	9 „ $38\frac{1}{3}$
Totals	1871	—	14 „ $36\frac{1}{4}$	—	14 „ $35\frac{1}{7}$
	'83	(includes Midland)	27 „ $39\frac{1}{3}$	—	25 „ $38\frac{2}{3}$

From the above we see what an enormous improvement has been made in the service to Scotland. It will be noticed that there is a greater improvement in the Edinburgh service than in that to Glasgow, and also on the East Coast line than the West Coast. It is curious that in 1871 the service to Scotland was so much better than that from Scotland.

The greatest improvement has been made in the day trains; taking those to Edinburgh, we find that by the East Coast route in 1871 the 10.0 a.m. from King's Cross took 10 hours 30 minutes, and the up train 10.20 from Edinburgh took 11 hours (this train was not express); whilst in 1883 both up and down trains took only 9 hours.

On the West Coast route in 1871 the—

10 a.m. down from Euston took 11 hours 10 minutes, } Neither
the 10.15 a.m. up from Edinburgh took 11 hours 15 minutes } express;

in 1883 the 10.0 a.m. down took 9 hours 50 minutes, and the 10.0 a.m. up took 10 hours.

By 1873 the East Coast had quickened to 9 hours 30 minutes both up and down, and the West Coast to 10 hours 25 minutes down, and 10 hours 15 minutes up.

Having now examined the train service of all the lines which ran expresses, we may sum up the total results.

We will first give the number of miles of line owned by each company which ran expresses, and also the number of miles of line on which those expresses ran; this latter amount will include joint lines, and also foreign lines over which any company ran its express trains.

TABLE III.

Name of Company.	Length of Line Owned.			Length of Line on which Expresses Ran in		
	1871.	1883.	Increase Per Cent.	1871.	1883.	Increase Per Cent.
North Western	1,506¾	1,773	17	576¼	612	6
Great Northern	491	605	23	265¾	290½	9
Midland	848½	1,260	48	311	728¾	134
Great Western, B. & E. S. Devon, &c.	1,714¾	2,267	32	356½	462	29
North Eastern	1,308¾	1,519	16	327¼	301¼	−8
Caledonian	704	767	9	179¼	197½	10
South Eastern	346	382	10	120½	131	9
North British	767	984	28	145½	145½	....
Brighton	370¼	435½	17	118¾	88½	−25
South Western	560¾	796½	41	171½	171½	....
M. S. & L.	254½	290	14	72	148¾	107
G. & S. W.	265	329	24	125	115¼	−8
Chatham	136	153	12	78	98	25
Great Eastern	748½	907	21	106¼	314¾	197
				2,953½	3,805¼	—
Less joint lines counted twice				13½	137	—
				2,940	3,668	24·7

This table shows that as a rule but a small portion of each company's system is utilised for express trains; and also that generally speaking the express running now is done on nearly the same lines as in 1871.

The Great Eastern stands highest in increase of length of line over which its expresses run. This is chiefly due to the opening of the line to Doncaster, and that now there are expresses to Norwich and Harwich, whereas formerly there were no expresses beyond Cambridge and Colchester.

The Midland takes second place, owing to the opening of the Settle and Carlisle, Marple and Liverpool, and Kettering and Nottingham lines, and also to its now running expresses from Bristol to Derby, Sheffield to York, and Milford to Hull, and also over the Staveley and Eckington line.

The Manchester, Sheffield, and Lincoln stands third, and owes its large increase to the opening of the Cheshire lines to Liverpool.

After these companies there is a great drop, and we come to the Great Western, which has extended its expresses from Shrewsbury to Birkenhead, and from Swindon to Cardiff.

The Chatham and Dover now runs expresses from Faversham to Westgate.

The Caledonian has put on expresses between Dundee and Perth, and the South Eastern between Canterbury and Ramsgate.

The only new express service on the Great Northern is from Grantham to Lincoln.

On the North Western no new service has been inaugurated, but the 6 per cent. increase is due to the opening of the Northampton loop, and by some of the Manchester trains using the North Stafford line from Colwich to Stone. The very small increase on these two last mentioned lines makes the very large increase in their service all the more creditable to them, and shows that their efforts have been to increase the accommodation to the towns they already served, and not so much to enlarge the sphere of their action.

Of the remaining lines the South Western and North British have remained stationary; the others all show a decrease.

That on the Glasgow and South Western is due to their Carlisle and Glasgow expresses running over the new direct line from Kilmarnock to Glasgow, instead of by the older and longer line *viâ* Paisley.

The North Eastern have no expresses between Leeds and York, which formerly they had.

The Brighton Company has extended its expresses from Lewes to Eastbourne, but on the other hand it has now no expresses to Portsmouth.

We will next give the number and mileage of expresses run by each company, and also their speed for 1871 and 1883, and the increases in all three, arranging the companies according to the length of their express mileage in 1871.

TABLE IV.

Name of Company.	Number of Distinct Expresses.			Average Journey-Speed.			Running-Average.			Total Express Mileage.				Present Order as regards Mileage.
	1871.	1883.	Increase.	1871.	1883.	Increase.	1871.	1883.	Increase.	1871.	1883.	Total Increase.	Increase per Cent.	
North Western	45	82	37	37½	40⅔	3⅙	40⅓	43 7/10	3⅖	6,273	10,405	4,132	65	1
Great Northern	31	67	36	38 9/10	43	4 1/10	42	46¾	4¾	3,520	6,780	3,260	92	3
Midland	32	66	34	37½	41⅜	4 1/10	40 9/10	45	4 1/10	3,175	8,860	5,685	147	2
Great Western	28	18	−10	38	42	4	41⅘	46¼	4⅓	2,928	2,600	− 328	− 11	5
North Eastern	27	19	− 8	37½	40½	3	39	43¼	4¼	1,711	2,112	401	23	6
Caledonian	15	16	1	36½	40⅕	3 7/10	38 6/10	42¾	4⅐	1,196	1,156	− 40	−3·4	8
South Eastern	15	12	− 3	39 4/10	41⅛	1¾	40½	41¾	1¼	941	940	− 1	....	10
North British	14	11	− 3	34⅐	39	4⅞	36 7/10	41	4 3/10	866	825	− 41	−4·8	13
Brighton	12	13	1	38 8/10	41	2⅕	41½	41⅜	⅛	686	1,155	469	68	9
South Western	7	3	− 4	38 5/10	41⅙	2 9/10	40	44⅓	4⅓	653	890	237	36	12
M. S. and L.	11	49	38	36	43	7	38⅘	44⅗	6	594	2,318	1,724	290	7
G. and S. W.	4	8	4	33¾	41⅔	7 11/12	37⅕	43½	6⅜	500	922	422	84	11
Chatham	6	9	3	39	42	3	41¾	43⅛	1⅜	468	690	222	47	14
Great Eastern	3	34	31	37 9/10	41	3 1/10	38 8/10	43¼	4⅓	161	3,040	2,879	1,788	4
Total	250	407	157*	37⅗	41⅜	4	40 4/10	44⅓	4	23,672	42,693	19,021	80	—

* Increase per cent. 62·8.

The foregoing table shows in a few figures the enormous development of the express service on our railways in the last twelve years.

The number of distinct expresses has increased 62·8 per cent., and their mileage 80 per cent.; while the length of line on which they are run has only increased 24·7 per cent. Both the average journey-speed and the running-average have increased 4 miles per hour; while the size and weight of the trains have enormously increased, probably some 30 to 50 per cent. as Mr. Foxwell says.

It will be seen that as regards amount of express mileage the order of the several companies has changed a good deal.

The North Western still keeps its place at the head of the list; the Great Northern and Midland have changed places, owing to great increase in length of the latter line; the Great Eastern has jumped from the bottom to the fourth place, and the Sheffield line has gone up in the world considerably.

Arranging the companies according to their running-speeds in 1871 and 1883 we have:—

TABLE V.

Name of Company.	Running-Average.		Order.	
	1871.	1883.	1871.	1883.
Great Northern	42	$46\frac{3}{4}$	1	1
Great Western	$41\frac{4}{5}$	$46\frac{1}{4}$	2	2
Chatham & Dover	$41\frac{3}{4}$	$43\frac{1}{8}$	3	10
Brighton	$41\frac{1}{2}$	$41\frac{2}{3}$	4	13
Midland	$40\frac{9}{10}$	45	5	3
South Eastern	$40\frac{1}{2}$	$41\frac{3}{4}$	6	12
North Western	$40\frac{1}{3}$	$43\frac{7}{10}$	7	6
South ,,	40	$44\frac{1}{3}$	8	5
North Eastern	39	$43\frac{1}{4}$	9	9
Great ,,	$38\frac{8}{10}$	$43\frac{1}{4}$	10	8
Caledonian	$38\frac{6}{10}$	$42\frac{3}{4}$	11	11
M. S. & L.	$38\frac{4}{7}$	$44\frac{3}{5}$	12	4
G. & S. W.	$37\frac{1}{8}$	$43\frac{1}{2}$	13	7
North British	$36\frac{7}{10}$	41	14	14
Average	$40\frac{4}{10}$	$44\frac{1}{3}$	—	—

It will be seen that most of the companies have made substantial increases in their speed, though their order has changed a great deal. Only one company, the Brighton, has not increased its speed, and this is undoubtedly due to the present very crowded state of the line between London and Croydon, which renders high speed on it almost impossible. All the great companies have increased by more than the average amount, except the North Western.

The South Eastern and Chatham lines do not show a very large increase, but it should be remembered that their continental expresses (which form the bulk of their express service) were very good in 1871.

We will next give the average number of express journeys made on each mile of line on which expresses are run, which will show which company gives the greatest average service on a given line:—

TABLE VI.

Name of Railway.	Average Number of Express Journeys on each Mile.		
	1871.	1883.	Increase.
North Western	10·9	17·0	6·1
Midland	10·2	12·1	1·9
Great Northern	13·2	23·4	10·2
„ Eastern	1·5	9·6	8·1
„ Western	8·2	5·6	−2·6
North Eastern	5·2	7·0	1·8
M. S. & L.	8·2	15·6	7·4
Caledonian	6·7	5·8	−0·9
G. & S. W.	4·0	8·0	4·0
North British	6·0	5·6	−0·4
Brighton	5·7	13·1	7·4
South Eastern	7·8	7·1	−0·7
„ Western	3·8	5·2	1·4
Chatham and Dover	6·0	7·0	1·0
Average	6·95	10·15	3·2

The portion of line on which the greatest number of express journeys was made in—

1871. L. and N. W., Euston and Rugby, 27 journeys.
'83. „ „ 51 „
'83. Cheshire Lines, Warrington and Liverpool, 51.

The Great Northern shows not only the greatest number of journeys per mile in 1871, but also the greatest improvement; it is however a short line, and has no long arms extending into comparatively thinly populated districts, like the North Western has from Chester to Holyhead, and Preston to Carlisle, or the Midland from Skipton to Carlisle. The M. S. and L. owes its large increase to the opening of the Cheshire lines.

The enormous increase on the line from London to Rugby is very noticeable.

TABLE VII.—*Long Runs.*

Name of Company.	1871.				1883.			Increase in Mileage.	
	Number.	Average Distance.	Running-Average.	Mileage.	Number.	Average Distance.	Running-Average.	Total.	Per Cent.
		Miles.				Miles.			
North Western	56	60	41	3,360	42	....	4	2,520	75
G. Northern	19	66¾	44½	1,268	30	7	5½	2,348	185
Midland	20	56¾	42¾	1,135	84	−3¾	3¾	4,377	385
South Eastern	10	68	40⅘	680	2	−1¾	1½	115	17
Great Western	11	52	47¾	572	13	4	¾	772	135
South „	11	46	40	506	2	1⅓	4⅜	109	21
North Eastern	8	57½	39 9/10	460	12	−1½	4 7/10	660	143
Brighton	7	40	42 6/7	280	16	5½	9/14	767	238
Caledonian	5	55	40⅓	275	3	4½	5⅙	201	73
North British	4	44½	38 1/7	178	3	16	2 1/7	245	137
Chatham	3	54	42 6/10	162	5	9	2 4/10	342	211
Great Eastern	1	51¼	41	51	23	5½	1½	1,311	2,570
M. S. & L.	Nil	—	—	—	8	48¾	43½	390	—
G. & S. W.	„	—	—	—	8	58½	44⅓	468	—
Total	155	57½	42	8,927	251	½	3¾	14,625	163

From this table it will be seen that the average length of these long runs has remained about the same, but the number has increased 162 per cent., the mileage 163 per cent., and the running-average 3¾ miles per hour.

The increase on the Midland is especially worthy of notice, that of the North Western is not so great as on some other lines, but in 1871 it had a very large number, more than one-third of the whole, amounting to 37 per cent. of the total long run mileage.

In 1871 the long runs formed 37·7 per cent. of the total express mileage; and in 1883 they formed 55·6 per cent. of it.

The average journey-speed has increased 10·7 per cent., whilst the running-average has only increased 9·9 per cent. These facts considered together show that part of the increase in journey-speed in 1883 has been attained by the trains making fewer stoppages.

TABLE VIII.—*Fastest Runs.*

Name of Railway.	1871. Between	Distance.	Running-Average.	1883. Increase in Speed.
Great Western	Paddington and Swindon	77¼	53⅕	None
Midland	Kentish Town and Bedford	48	47⅕	3⅕
Great Northern	King's Cross and Peterboro'	76¼	47	5¼
Chatham	Herne Hill and Dover	74	46¼	None
North Western	Rugby and Stafford	50¾	45½	6½
South Eastern	Cannon Street and Dover	74½	45	None
Brighton	Croydon and Brighton	40	44⅘	2½
South Western	Basingstoke and Vauxhall	46¼	43⅓	3
North Eastern	York to Darlington	44¼	42 8/10	7 2/10
Caledonian	Carlisle and Carstairs	73½	42	7⅔
Great Eastern	Bishopsgate and Colchester	51¼	41	7⅚
	Fastest over Steep Gradients.			
Midland	Kentish Town and Leicester	97½	45¾	1¼
Caledonian	Carlisle and Carstairs	73½	42	6½
Midland	Derby to Woodley	52	41 6/10	2¾
North Western	Carlisle and Carnforth	62¾	40½	3¾
„ British	„ Hawick	45½	39	3

Note.—The last column shows the increase of speed of the fastest run in 1883, but this run is not necessarily over the same ground as the fastest run in 1871, except in the cases of the fastest runs over steep gradients, where the run is over the same ground in both years.

In the latter part of the above table the increase on the Caledonian should be noticed.

TABLE IX.—*Longest Runs in* 1871.

Name of Line.	Between	Distance.
		Miles.
Midland	Kentish Town and Leicester	97½
North Western	Preston and Carlisle	90
„	Chester and Holyhead	84½
„	Euston and Rugby	82¾
North Eastern	York and Newcastle	80¼
Great Western	Paddington and Swindon	77¼
„ Northern	King's Cross and Peterborough	76¼
North Western	Rugby and Crewe	75¼
South Eastern	Cannon Street and Dover	74½
Chatham	Herne Hill and Dover	74
Caledonian	Carlisle and Carstairs	73½

TABLE X.—*Towns best supplied with Expresses in* 1871.

Distance.	Between	Number of Express Journeys per Day.	
		1871.	1883.
82¾	Rugby and London	27	50
186½—203	Manchester ,, ...	26	42
181½—199	Stockport ,, ...	26	35
126½—127¾	Nottingham ,, ...	21	35
158	Crewe ,, ...	20	34
76¼	Peterborough ,, ...	20	29
158½—162	Sheffield ,, ...	19	33
105½	Grantham ,, ...	19	37
113—129¼	Birmingham ,, ...	18	12
99¼	Leicester ,, ...	17	26
185½—198	Leeds ,, ...	16	28
193—211½	Bradford ,, ...	15	22
156	Doncaster ,, ...	15	27
49¾	Bedford ,, ...	14	17
188	York ,, ...	11	20
128¾	Derby ,, ...	10	21
31½	Liverpool and Manchester	4	52

TABLE XI.—*Quickest Time between London and Important Towns during Summer.*

Miles.		1871.			1883.		Company.
		Time.		Journey-Speed.	Decrease in Time.	Increase in Journey-Speed.	
	Up or Down.	H.	M.		H.	M.	
540¼	Aberdeen ..... d.	15	40	34$\frac{3}{5}$	–	50	2	N. Western and Caln.
47¾	Basingstoke ..... ,,	1	7	42$\frac{3}{4}$	–	4	2$\frac{3}{4}$	South Western
106¾	Bath ..... ,,	2	13	48	—		—	Great ,,
49¾	Bedford ..... ,,	1	8	44	–	8	5$\frac{3}{4}$	Midland
335	Berwick ..... ,,	8	20	40$\frac{1}{5}$	–	42	3$\frac{3}{5}$	G.N. and N.E.
228¼	Birkenhead ..... up	7	–	32½	1	52	12½	Great Western
113	Birmingham ..... ,,	2	57	38$\frac{3}{10}$	–	22	5½	North ,,
129¼	,, ... ,,	2	55	44$\frac{2}{10}$	–	13	3$\frac{6}{10}$	Great ,,
115½	Bournemouth .... d.	3	50	30$\frac{1}{10}$	–	41	6½	South ,,
193	Bradford ..... ,,	4	45	40$\frac{6}{10}$	–	30	4$\frac{4}{5}$	Great Northern
209½	,, ... ,,	5	20	39$\frac{2}{10}$	–	25	3$\frac{3}{10}$	Midland
50½	Brighton ..... ,,	1	15	40$\frac{4}{10}$	–	10	6$\frac{1}{5}$	L.B. and S.C.
118½	Bristol ..... both	2	36	45½	—		—	Great Western
163	Buxton .... up	4	57	32$\frac{9}{10}$	–	52	7$\frac{1}{10}$	Midland
55	Cambridge..... d.	1	30	36$\frac{2}{5}$	–	15	7$\frac{8}{10}$	Great Eastern
58	,, ... both	1	30	38¼	–	15	8$\frac{1}{5}$	,, Northern
68	Canterbury ..... d.	1	46	38$\frac{9}{7}$	–	8	2¾	South Eastern
61¾	,, ... ,,	1	31	40$\frac{7}{10}$	–	8	3$\frac{7}{8}$	Lon. Chat. and Dover
170½	Cardiff ..... up	4	58	34$\frac{2}{5}$	–	37	5	Great Western
299¼	Carlisle ..... d.	7	48	38$\frac{4}{10}$	–	33	3	North ,,
34	Chatham ..... ,,	–	50	40$\frac{4}{5}$	—		—	Lon. Chat. and Dover
122½	Cheltenham ..... ,,	3	30	35	–	15	2$\frac{3}{3}$	Great Western
179	Chester ..... ,,	4	18	41$\frac{6}{10}$	–	8	1$\frac{4}{10}$	North ,,
213	,, ... ,,	6	10	34½	1	20	9$\frac{1}{3}$	Great ,,
152¼	Chesterfield ..... both	3	35	42$\frac{1}{3}$	–	17	3$\frac{2}{3}$	Midland

TABLE XI *Contd.—Quickest Time between London and Important Towns.*

Miles.		Up or Down	1871. Time. H.	M.	1871. Journey-Speed.	1883. Decrease in Time. H.	M.	1883. Increase in Journey-Speed.	Company.
51¼	Colchester	d.	1	15	41	–	5	3⅓	Great Eastern
94	Coventry	up	2	30	37⅗	–	26	7 9/10	North Western
158	Crewe	d.	3	50	41½	–	20	3⅘	,,
232¼	Darlington	,,	6	3	38 4/10	–	44	5 1/10	G.N. and N.E.
128¾	Derby	both	3	10	40 6/10	–	17	4	Midland
156	Doncaster	d.	3	38	43	–	25	5½	Great Northern
74½	Dover	,,	1	39	45	—		—	South Eastern
78	,,	,,	1	45	44⅖	—		—	Lon.Chat. and Dover
330	Dublin	,,	11	30	28⅔	—		—	North Western
471¼	Dundee	,,	13	25	35⅛	1	15	3⅝	N.W. and Caledn.
254	Durham	,,	6	45	37 8/10	–	46	4 9/10	G.N. and N.E.
65½	Eastbourne	,,	1	55	34 1/10	–	20	7 4/10	L.B. and S.C.
392½	Edinburgh	,,	9	55	39 1/10	–	55	4	East Coast
400¼	,,	,,	10	33	37 9/10	–	43	2 8/10	West ,,
69¾	Ely	,,	2	1	34⅜	–	23	8¼	Great Eastern
171½	Exeter	,,	4	15	40⅓	–	12	2	South Western
194	,,	both	4	15	45⅘	–	1	—	Great ,,
312¼	Falmouth	d.	9	30	32 8/10	1	–	4	,, ,,
69	Folkestone	both	2	–	34½	–	15	5	South Eastern
403¾	Glasgow	d.	10	42	37 7/10	–	42	2½	West Coast
439¾	,,	,,	11	40	37 7/10	1	20	4¾	East ,,
105½	Grantham	,,	2	26	43 8/10	–	22	7 7/10	Great Northern
114	Gloucester	,,	3	–	38	–	7	1½	,, Western
199½	Halifax	,,	5	10	38 6/10	–	25	3 4/10	,, Northern
68¾	Harwich	,,	2	15	30⅖	–	29	8⅖	,, Eastern
60½	Hastings	both	1	42	36	–	5	1⅖	South ,,
263¾	Holyhead	d.	6	35	40	—		—	North Western
188½	Huddersfield	both	5	–	37 7/10	–	25	3 3/10	G.N. and M.S. & L.
197	Hull	up	5	10	38⅛	–	20	2⅛	G.N. and N.E.
594½	Inverness	d.	18	5	33	1	25	2⅜	W.Coast & Highland
68¼	Ipswich	,,	1	52	36½	–	12	4¾	Great Eastern
230¼	Lancaster	,,	6	–	38⅓	–	20	2⅓	North Western
106	Leamington	up	2	25	43 8/10	–	12	4	Great ,,
185½	Leeds	d.	4	28	41⅜	–	28	4⅘	,, Northern
196	,,	both	4	56	40 1/7	–	26	5 1/7	Midland
99¼	Leicester	d.	2	14	43 1/10	–	7	3 9/10	,,
130¼	Lincoln	,,	3	25	38 1/10	–	20	4 1/10	Great Northern
193½	Liverpool	,,	5	–	38 7/10	–	30	4 3/10	North Western
170	Macclesfield	,,	4	30	37⅞	–	25	3⅜	,,
203	Manchester	up	5	5	39 9/10	–	35	5 1/10	G.N. and M.S. & L.
189	,,	d.	4	55	38⅖	–	25	3⅗	North Western
189	,,	,,	5	–	37⅘	–	25	4	Midland
73¾	Margate	up	2	–	37	–	15	5	Lon.Chat. and Dover
238½	Middlesborough	d.	6	30	36 7/10	–	46	4 9/10	G.N. and N.E.
285½	Milford Haven	,,	8	40	32 9/10	–	40	2¾	Great Western
120	Newark	,,	2	48	43	–	12	3	,, Northern
268¼	Newcastle	,,	6	35	40 7/10	–	28	3 3/10	G. N. and N. E.
158½	Newport	up	4	32	35⅝	–	28	3½	Great Western
67½	Northampton	d.	1	45	38⅘	–	23	9⅗	North ,,
113½	Norwich	,,	3	35	31⅘	–	31	5⅘	Great Eastern
127¾	Nottingham	,,	3	5	41 4/10	–	17	4¼	,, Northern
126½	,,	,,	3	5	41	–	30	7	Midland

TABLE XI *Contd.—Quickest Time between London and Important Towns.*

Miles.		Up or Down.	1871. Time. H.	M.	1871. Journey-Speed.	1883. Decrease in Time. H.	M.	1883. Increase in Journey-Speed.	Company.
63¼	Oxford	up	1	25	44 6/10	–	7	4 4/10	Great Western
326½	Penzance	d.	10	19	31 1/2	1	24	5	,,
450½	Perth	,,	12	19	36 1/2	–	54	3	N.Western and Caln.
462	,,	,,	12	49	36	1	19	4	G.N.,N.E., and N.B.
76¼	Peterborough	,,	1	37	47	–	7	3 4/5	Great Northern
246½	Plymouth	up	6	10	39 8/10	–	10	1 1/5	,, Western
73½	Portsmouth	,,	2	5	35 4/5	–	10	3 1/4	South ,,
209¼	Preston	d.	5	19	39 1/4	–	29	4	North ,,
79	Ramsgate	up	2	12	36	–	12	3 1/2	Lon.Chat.and Dover
83¾	,, (fromL.B.)	d.	2	28	33 3/5	–	22	6 2/5	South Eastern
36	Reading	,,	–	45	48	–	1	– 6/10	Great Western
138½	Retford	,,	3	11	43 1/2	–	17	4 1/4	,, Northern
82¾	Rugby	,,	1	55	43 1/5	–	10	4 1/5	North Western
83½	Salisbury	,,	2	–	41 3/4	–	4	1 1/4	South ,,
230¾	Scarboro'	up	6	25	36	–	50	5 1/3	G.N. and N.E.
162	Sheffield	,,	3	52	41 8/10	–	29	6 2/10	,, and M.S. & L.
158½	,,	,,	3	55	40 1/2	–	20	5 2/3	Midland
163	Shrewsbury	up	4	25	36 9/10	–	37	6 1/10	North Western
171	,,	both	4	40	36 6/10	–	53	8 2/3	Great ,,
223	Skipton	d.	6	9	36 1/4	–	47	5 1/4	Midland
79	Southampton	,,	2	21	33 6/10	–	17	4 1/2	South Western
133½	Stafford	,,	3	11	42	–	11	2 1/2	North ,,
184	Stockport	,,	4	43	39	–	24	3 2/3	,, ,,
183¼	,,	up	4	55	37 1/4	–	37	5 1/4	Midland
199	,,	,,	5	5	39 1/10	–	6	1/10	G.N. and M. S. & L.
666	Stroome Ferry	d.	22	20	29 8/10	1	30	2 2/10	W.Coast & Highland
216	Swansea	up	6	35	32 2/3	–	35	3 1/4	Great Western
77	Swindon	both	1	27	53 1/5	—		—	Great Western
220	Torquay	up	5	30	40	–	18	2 1/2	,,
175	Wakefield	d.	4	6	42 7/10	–	26	5	,, Northern
182¼	Warrington	,,	4	28	40 8/10	–	3	1/2	North Western
168	Weymouth	,,	5	15	32	–	55	6 2/3	Great ,,
244½	Whitby	,,	7	15	33 7/10	–	50	4 3/10	G.N. and N.E.
696	Helmsdale	,,	23	30	29 2/10	2	30	3 9/10	W.Coast & Highland
	for Wick		Extreme north point			of railway in 1871.			
194	Wigan	d.	5	1	38 4/5	–	27	3 3/4	North Western
141	Wolverhampton	up	3	20	42 3/10	–	16	3 7/10	Great Western
120	Worcester	both	3	20	36	–	22	4 1/2	,, ,,
121½	Yarmouth	d.	3	45	32 3/10	–	24	4	,, Eastern
124¼	Yeovil	,,	3	15	38 1/4	–	14	2 3/4	South Western
188	York	,,	4	30	41 7/9	–	35	6 2/9	Great Northern

We have now given the principal statistics of the English express trains of 1871, and compared them in the most important points with those of 1883. But there are several points which have hardly been alluded to, these are :—

1st. The greatly increased weight of the "express" trains. The weight has probably increased some 50 to 60 per cent., as stated by Mr. Foxwell. Part of this increase is no doubt due to the

ordinary increase of traffic, but by far the greater part must be due to the introduction of third class passengers into express trains. Experience has shown that the larger the facilities which are offered to this class of passengers, the greater becomes the traffic.

It is no doubt difficult to estimate the exact increase in the weight of trains, but as an example we would draw attention to some statistics given by Mr. Findlay, general manager of the London and North Western Railway, in 1875 (*vide* "Minutes, Proceedings of "Institution of Civil Engineers," vol. xli, part 3). This gentleman states that the weight of the 5 p.m. express from Euston which was 149 tons in 1863, increased to 174 tons in 1866, to 201 tons in 1869, and to 257 tons in 1872; and no doubt this increase has gone on, though at perhaps not such a rapid rate, as now the tendency is to increase the number of trains, rather than to increase their size and weight.

2nd. The greatly increased punctuality.

3rd. The much greater immunity from accidents, and lastly the great improvements which have been made in the rolling stock, and in appliances for working the line, continuous brakes, block telegraph, interlocking of points and signals, &c.

As regards punctuality it is not very easy to obtain statistics, but there is no doubt that it is more nearly attained now than it was twelve years ago.

Altogether it will be seen that the improvement effected in the last twelve years is very great. On some lines it is more, and on others less, but in every case it is considerable. It will be seen from the tables of express service that generally towns at which there is competition have benefited more than those where there is none, unless they happen to lie on a main line to places at which there is competition. This improvement will no doubt go on. The number of trains will increase, and so will their average speed, but there are indications that the maximum practical speed has on some lines almost been reached. Some margin must be left. Trains will, with every care, occasionally start a minute or two late; they may be stopped and delayed at signals and junctions; and high winds and slippery rails will affect their speed; and hence it is necessary to allow some margin of time to cover these contingencies; otherwise punctuality, which is as desirable as high speed, would be the exception and not the rule, as it should be.

It does not seem possible to decrease the length of time of stoppages; as the traffic increases, and there are more persons travelling, it naturally takes a longer time to get them and their luggage in and out of the trains.

Although the speed of the quickest trains at present may not

be very greatly increased, still the others may gradually approach their standard, and thus the average speed throughout the country be raised by a very considerable amount. At present the average speed is $41\frac{3}{5}$ miles per hour, and the Great Western Exeter trains have a speed of $45\frac{3}{4}$ miles per hour; so that an increase of speed of at least 4 miles per hour might, if found necessary, be made, without the locomotives having to run any faster than they do on some lines at present; probably, however, owing to the very hilly nature of parts of our country, this will not be the case; but the average may very likely be raised in time to some $43\frac{1}{2}$ miles per hour. The difficulties of increasing the speed however become greater as the traffic increases, and the trains become heavier and the lines more crowded.

Many other points might have been compared between our past and present train service, but enough has been given to show that we have every reason to feel satisfied that the control of our national highways has not been placed in incompetent hands, and that it is quite unnecessary for us to consider the question of the acquisition of the railways by the State as long as we are as well served as we are now, and as long as the same energy is displayed in their management as has been the case up to the present time.

In conclusion, the writer would wish to express the great obligations he is under to Mr. Foxwell, both for his kind permission to use his figures, and also for his valuable help and advice on many points.

Discussion *on* Lieutenant Willock's Paper.

Mr. R. Price Williams said he would in the first place beg to thank the author for his exceedingly interesting and valuable paper. It was impossible to over estimate the amount of time and labour he must have devoted to its preparation. He could not help thinking, however, that the problem of determining the increase of the speed of express trains in the eventful period dealt with by the author, was of a rather more complex character than that involved in the mere record of the difference in the rate of speed. In point of fact, during the twelve years 1871-83 a complete revolution had occurred in railway travelling, which had been brought about mainly by the conveyance of third class passengers by express trains: a course initiated by the Midland Company in 1872, and which was very quickly followed by all the other railway companies north of the Thames. The effect of this was not only to require longer and heavier trains, and a more powerful class of engines, but the vast increase in the number of third class passengers necessitated in many cases a complete rearrangement of the train service, and dividing the train into two portions. It was this large increase in the number of third class passengers, coupled with the depletion which followed in the already scant number of passengers in the second class carriages, which undoubtedly led to the abolition of second class carriages by the Midland Company. Strange to say, the company which has so far benefited most by this remarkable change in railway policy, is the London and North Western Railway. For instance, as will be seen from a reference to the following table, the number of third class passengers on that line, which in 1871 only amounted to 5,800,000, has increased to 45,556,000 in 1882,* an increase of 685 per cent.; the third class receipts in the meantime having increased from 334,000*l.* to 2,166,000*l.*, an increase of 547 per cent. The number of first and second class passengers have decreased in the period referred to 9·92 per cent. and 40·28 per cent. respectively; the gross receipts in the case of the second class having remained almost stationary. One chief element affecting the speed of express trains is the difficulty of working the slow and fast traffic on the same line of rails, as illustrated by the train service diagram of the Great Northern Railway which he had placed upon the walls. From this it would be seen that in some cases as many as seven passenger, goods, and mineral trains had to be shunted at stations, or passed on to relief lines between Peterborough and London, to make way for the express trains. The red lines on the diagram indicated the passenger trains; the blue, the goods; and the black, the coal trains; but such was the

* See Table I in Appendix to Discussion, kindly furnished by Mr. R. Price Williams.

perfection to which the working of the block system had now reached, that the large and mixed traffic on that railway was carried on without the slightest risk of accident. He thought the author had not sufficiently taken into account the growth of the goods and mineral traffic in the period in question, which had been very great, much larger in fact than in the case of the passenger traffic, and that this had a material effect in retarding the increase of the speed of the express passenger trains; for instance, while the increase in the passenger receipts in the course of these twelve years has been 26 per cent., that of the goods and minerals had been as much as 43 per cent., and the increase in the tonnage nearly 67 per cent.

Passenger Traffic.

		£	Increase. Per cnt.
1882	Gross receipts.....	3,936,949	—
'83		3,124,538	—
		812,411	26·00

Goods and Mineral Traffic.

	Tonnage.	Increase.	Gross Receipts.	Increase.
	£	Per cnt.		Per cnt.
1882	35,351,924	—	6,229,278	—
'83	21,175,602	—	4,362,515	—
	14,176,302	66·94	1,866,763	42·79

This explained to some extent the reason why the increase in the speed of the London and North Western express trains had not been so conspicuous as in the cases of some of the other railways mentioned by the author. The traffic on this, the premier line, was so enormous, and the growth, both of passenger and goods traffic, in the period referred to had been so large, that although the company had now four lines of way to Rugby, three to Nuneaton, and four lines from Stratford to Crewe, it was almost impossible to increase the speed of the express passenger trains to any great extent. He considered that when the company had four lines of way from London to Crewe, one main cause of the difficulty in quickening the speed of the express trains would be removed. He had heard Mr. Webb, the company's locomotive engineer, say, if he only could calculate upon having a clear road between London and Manchester, he would engage to do the distance in half the time now taken by their quickest trains. Another important matter affecting the increase of the speed of express trains, and to which the author has drawn attention, was the effect of the gradients. In order to afford some idea of the large and

instantaneous effect of the inexorable law of gravity in reducing or accelerating the speed of trains, he had placed upon the walls a speed diagram, showing the speed of some of the London and North Western passenger trains between Crewe and Preston; on this section there were a series of 1 in 100 gradients, over what was generally known as the "Coppul Bank." The lower earth coloured line on the diagram represented a section of the line, and in order that the outline of the speed might compare symmetrically with that of the gradient, he had, as would be seen, inverted the ordinates representing the speeds; the red coloured line above the gradient section showed the speed of the "Down Scotch Express" between Crewe and Preston, the "Flying Scotchman," as it was called; and that immediately below it represented the up Scotch express between Preston and Crewe; the blue coloured outline showing the speed of stopping trains. The effect in the reduction of the speed of the Scotch express up the 1 in 100 gradients at Coppul was very marked, the reduction in the speed in the short distance of one mile being from 55 to 35 miles an hour. Similarly the effect of the accelerating force of gravity was also very discernible on the descending gradients; and it would not fail to be noticed how rarely a speed of 60 miles an hour was maintained, except at the bottom of descending gradients and on the level. He should mention that the speed of these trains had been taken by himself and an assistant at each quarter mile post with a chronograph, and it would be observed that although that speed had been attained on several portions of the line, yet owing to the effect of these gradients, the occasional slackening of speed at junctions (notably on one portion of the line, where renewals of way were proceeding), the average speed of this, the quickest train of the London and North Western Railway, only averaged 55 miles an hour. On the other hand, during the period dealt with in the paper, a variety of causes had materially contributed to increase the speed of express trains, and amongst these might be mentioned the introduction of continuous breaks, the general adoption of which on all express trains had been such as to enable them to be stopped in about one-sixth of the time that would have been possible with the ordinary engine and guard's breaks. How instantaneously these breaks acted would be clearly seen from a reference to the remarkable outline of the speed of the stopping trains between Preston and Crewe, as shown on the diagram. The great improvement which had been made in the permanent way through the introduction of a much better and more durable class of material, viz., Bessemer steel rails, had also largely contributed to the acceleration of the speed of the trains, inasmuch as the trains were not now subject to the constant slackenings of speed due to the renewals of the way; the average life of a steel rail was about ten times that of an iron one, and all the main lines are now laid with this splendid material. The adoption of steel for locomotive boilers, which allow of much higher working pressure being obtained, has also tended to operate in the same direction, and it was due to Mr. Webb, whom he was glad to see present on this occasion, to say that it was he who first had the

courage to adopt it, when other people were inclined to disbelieve in the new material; and now he believed steel had entirely replaced iron in the construction of locomotive boilers on the London and North Western Railway, and other companies were beginning to follow Mr. Webb's example.

Mr. E. M. M. Johnstone, of Dublin, having made a few remarks,

Mr. George Findlay said it appeared to him that the conclusions that had been drawn with regard to third class traffic were not altogether borne out by the actual circumstances of the case, because although prior to 1871 third class passengers were not generally carried by express trains, yet they were to a great extent by fast trains; and his view was that on the whole the change produced by the Midland Company had not been a commercial success, nor had it led to any great increase of third class passengers for long distances. In London, Birmingham, Liverpool, and Manchester, the tendency of the population had been to find an outlet within a radius of 15 or 20 miles; but to a third class passenger a journey between Liverpool and London, or between Scotland and England, meant one of necessity, involving considerable expense, which would not voluntarily be incurred. His view was that there had been a great development of short third class passengers, but not of long distance traffic. One of the most important points that railway managers and directors had to deal with at the present time was the enormous increase in the weight of trains, and the speed which had been brought about by competition. He had no hesitation in saying that if the express traffic of the country was managed upon commercial principles, it would be totally unnecessary to run such frequent trains between London and Manchester. No doubt the public now had greater facilities for getting from one point to another; but, as a matter of fact, the profit from the passenger traffic of the country had not increased as might have been expected, considering the large amount of accommodation that had been given. The increased weight of the trains had also arisen from the spirit of competition. Lavatory and saloon carriages were now run, and the paying load of these trains had proceeded in inverse ratio according to the speed and accommodation given. Increased traction power was required to drag these enormous trains at a speed of 40 to 50 miles an hour, and he believed greater punctuality had been observed, but not without an enormous expenditure. As far as the London and North Western were concerned, they had practically duplicated the line between London and Crewe. The remark in the paper as to the non-acceleration of the service between London and Holyhead pointed to this, that the principal trains between these places were the Irish mails, which were run at a given speed under a contract which terminated a year ago. By the new contract the speed was to be increased to $46\frac{1}{4}$ miles an hour, and the directors were now considering with the Post Office the question of a similar acceleration of speed by the limited mails between London and

Carlisle. In 1864 the limited mail train, exclusive of the engine, measured 204 ft. 6 in. in length, and consisted of two brake vans, two post office vans, and four carriages. In 1874 the length was increased, by the conversion of four-wheeled vehicles to six-wheeled, to 249 ft. 6 in., the number of vehicles being the same as in 1864; but in 1884 the length had increased to 463 ft., and there were thirteen vehicles instead of eight. The average length of each carriage in 1864 was 25 ft. $6\frac{3}{4}$ in.; in 1874 it was 31 ft. $2\frac{1}{2}$ in.; and in 1884 it was 35 ft. $7\frac{3}{8}$ in. In 1864 the total weight of the train was 54 tons 19 cwt. 1 qr.; in 1874 it was 75 tons 3 cwt. 3 qrs.; and in 1884 it was 155 tons 18 cwt. and 2 qrs. It would readily be seen what an enormous power was necessary to drag such a train through the country at a speed of 40 or 41 miles an hour, and to maintain punctuality. One point in regard to the profitable working of the traffic had not been alluded to. When the Midland determined to carry third class passengers by all trains, they did away with second class carriages, and reduced the fares for first class from an average of 2*d.* a mile to $1\frac{1}{2}d.$ The result had been that between 1874 and 1882 the London and North Western, who had to follow to a certain extent, had an increase of $3\frac{1}{2}$ million passenger train miles run per annum, and the cost of working these trains was hardly covered by the increased earnings, so that an enormous amount of work had been done for the public for practically no return. During the same period, the Great Western, which was in an exceptional position with regard to a great part of their system, ran an additional passenger mileage of 4,800,000 miles, and earned about 3*s.* 10*d.* per train mile. Although it was not equal to their average earning, yet they made a considerable profit upon their passenger business. The increased passenger train mileage of the Midland was 5,277,000 miles, and they earned an additional increase of only 343,000*l.*; so that whatever the Midland might have done for the public, there could be no doubt that commercially it had not been a success, as they had only earned on their increased mileage 1*s.* 9*d.* per train mile, a sum which would little more than cover the actual locomotive, carriage, and wagon expenses. The fact therefore was that during the eight years from 1874 to 1882, both the Midland and the London and North Western had been doing an enormous amount of increased work for the public without any profit as far as they themselves were concerned. That was borne out by a comparison of the average earnings per train mile of the same companies. Taking the half-year ending December, 1883, and comparing with the same period in 1871, it appeared, so far as the London and North Western were concerned, that whilst in 1871 the average earning per passenger train mile was 5*s.* $2\frac{3}{4}d.$, in 1883 it was 4*s.* $5\frac{1}{2}d.$ The earning on the Midland in 1871 was 4*s.* 1*d.* per train mile, but in 1883 it was only 3*s.* $6\frac{3}{4}d.$; whilst in the same period the Great Western fell from 5*s.* 3*d.* to 5*s.* 1*d.* He therefore considered that if the express passenger traffic had been worked upon commercial principles, the large amount of extra mileage would never have been run; and he had no hesitation in saying that although for three or four months in the summer the Scotch traffic taxed all the energies of the three great lines between

England and Scotland, yet in winter one service would be quite sufficient to carry all the passengers. Railway companies were unpopular; but if ever the time came when the State took over the railways of the kingdom, the public would find that the Government would not give such facilities as arose from the competition between the different companies.

Mr. F. W. Webb said that as locomotive engineer of the London and North Western, he had had to contend with constantly increasing weights of trains, especially during the last decade. In January last he told Mr. Findlay that he must either run two engines with the limited mail or have the load reduced, the train at that time, exclusive of the locomotive, passengers, parcels and mails, weighing 168 tons. One carriage was taken off, so that the speed was still maintained with one engine. If two engines were run it would mean in wages over 400*l.* to the company per year for that train alone. The London and North Western was favourably situated with regard to gradients as compared with some other companies, and that had enabled him up to the present time to work with lighter engines, his heaviest express engines not weighing more than 36 tons, exclusive of the tender. He believed that the London and North Western was the only great company which adopted the method of picking up water at full speed without having to stop, but instead of this, some companies were running with tenders carrying 3,500 gallons of water. The tenders with the heaviest trains on the London and North Western only carried 1,800 gallons, but now with that quantity and with the present weight of some of the trains they were come to their limit, and he had been trying to meet the case by making the water and the fuel go further. He had twenty compound engines now running, doing the express service between Crewe and London, and between London and Holyhead, and for the heavy night trains he was building still larger engines. He was enabled to do that on the compound principle in a way that would not be possible with the ordinary type of engine. In the ordinary construction he was tied down by the length of the coupling rods, but in the compound engine, as one pair of wheels was driven by steam from the boiler, and the other pair by the exhaust steam from the first pair of cylinders, he needed no coupling rods, and was able to place the wheels further apart, and so get in a larger firebox. Last year the engines on the London and North Western ran over 45 million miles, which was about equal to a mile and a half every second of time, or 90 miles a minute, or round the world every $4\frac{1}{4}$ hours. He had also calculated that every hour throughout the year 14 cwt. of steel disappeared off the rails on the London and North Western system. With regard to the amount of fuel required to do the work, he found that in the early days of the Liverpool and Manchester line, 1 lb. of fuel per ton per mile was consumed for a speed of 15 miles an hour; but taking the present speed of 45 miles an hour, with trains of over 200 tons weight, the compound engine consumed from London to Carlisle 29 lbs. a mile, so that some progress has been made between that time and the present in economising the

fuel, and consequently the amount of water required to do a certain amount of work.

Mr. E. Foxwell said he agreed with Mr. Findlay that probably not one-half or even one-quarter as much improvement would have taken place had the railways been under Government control. There were now 42 expresses per day between London and Manchester, run by three competing companies, and it was unlikely that there would have been more than one-third of that number under Government management; while in all probability the speed would have been less, the carriages not so comfortable, and the fares not so low. And though such frequent opportunities for quick transit were a very great benefit to the country, yet the mere speed by itself was not the whole advantage; for in order to attain high speeds the workmanship of the engines and carriages, and the permanent way, must be attended to more thoroughly, and all the industries associated with railway work must be kept up to the highest pitch of excellence. He thought time might be saved in two details, the putting in of lamps, and the putting in of luggage. Large numbers of passengers could get into a train in less than one minute, as was proved in the case of the Underground Railways, but luggage took four or five minutes. Some improvement was therefore possible in the way in which luggage was stored on the platforms, and the vans might be divided into compartments, and the luggage got ready for the coming stations. Perhaps the lamps might be deposited by some overhead apparatus, and so a great deal of time be saved.

Mr. James Mowatt, taking with Lieutenant Willock and Mr. Foxwell the standpoint that a good express service implied a high standard of efficiency, said that in 1871, the year for which the speeds of the South Eastern continental trains were given, the Franco-German war had just ceased, and the train service between London and Paris had to emerge out of a transition state, not affording a good standard of comparison. But before the Franco-German war the mail used to run between Dover and London, over the crowded joint lines and junctions between Redhill and London, doing the entire distance of 88 miles in two hours, or 44 miles an hour, only one mile an hour slower than the 45 miles an hour of to-day. Again, he recollected that so long as 1862, the year of the London Exhibition, the journey between London and Paris was made in $9\frac{1}{4}$ hours, though round by Redhill, thirteen miles longer than by the present Sevenoaks route, besides halting at Redhill or Tunbridge, with poorer steamers and harbours, and an omnibus transit through Boulogne. And there were two day tidal trains, and one before and one after breakfast, instead of one as at present. Query, ought credit to be taken for improvement? As the third class question had been introduced, he once heard a gentleman of Bristol say at a Great Western meeting, "You make a great mistake in dividing mankind into three classes, there are only two—people who can pay, and people who cannot; these latter will incline to the

cheapest way." They form the great mass of mankind. Why not then take a good omnibus class and rate as the standard, with such other classes as circumstances required? As to the Midland Railway and its supposed innovation of two classes only; there was no inherent necessity for three. Till a comparatively recent date, there were many trains with only two first and second, or first and third, or again, first and second with long distance third class passengers travelling in the second class carriages; in other words, the same carriage, but with different tariffs for local and through passengers. Government, with its want of elasticity, managing the railways would be a mistake; not even the evils of reckless competition would be outweighed by a Government doing, as would be likely, not what was wanted, but what it fancied ought to be wanted. In India Government had trains run right through all night long in some parts, regardless of its not paying, and being contrary to the known habits of the people. As to the lighting of trains alluded to, electricity may obviate this, and save both time and money: in the Pullman trains between London and Brighton the whole train was in a moment lit up only just while going through the tunnels.

The PRESIDENT, in proposing a vote of thanks to Lieutenant Willock for the very able paper he had read, said he was sure that the Society was much indebted to the author for the labour which he had spent upon the paper, and also to Mr. Foxwell, who first took up the subject. The Society, and through the Society, the public, had been placed in possession of a great amount of information as to the improvement in the means of communication during the last twelve or thirteen years. One result of bringing such a novel subject before the Society had been that comparatively few of the members who usually took part in the discussions had been prepared to speak upon it. They had to accept the conclusions of Mr. Willock and Mr. Foxwell, without being in a position to criticise them. One or two gentlemen such as Mr. Price Williams and Mr. Findlay, who were experts in the matter, were quite competent to discuss it; but the greater number must confess that they were not acquainted with the subject of the speed of express trains. Still, so far as they could judge from the arrangement of the paper, it was really a most excellent contribution to statistical study, and he was quite sure from the method which had been followed, and the care exercised, that the facts were to be depended upon, and the conclusions to be trusted. The discussion also had given them a great amount of information as to the improved means of railway communication during the last twelve years; and Mr. Findlay and Mr. Webb were especially to be thanked. He did not propose to thank Mr. Price Williams in the same special way, because the members of the Society were well acquainted with him, and knew the services he had rendered. He did not intend to dwell upon the subject under discussion, but only to say one word in recognition of the fact that the railway companies of this country had done a great deal in a short period to improve the means of

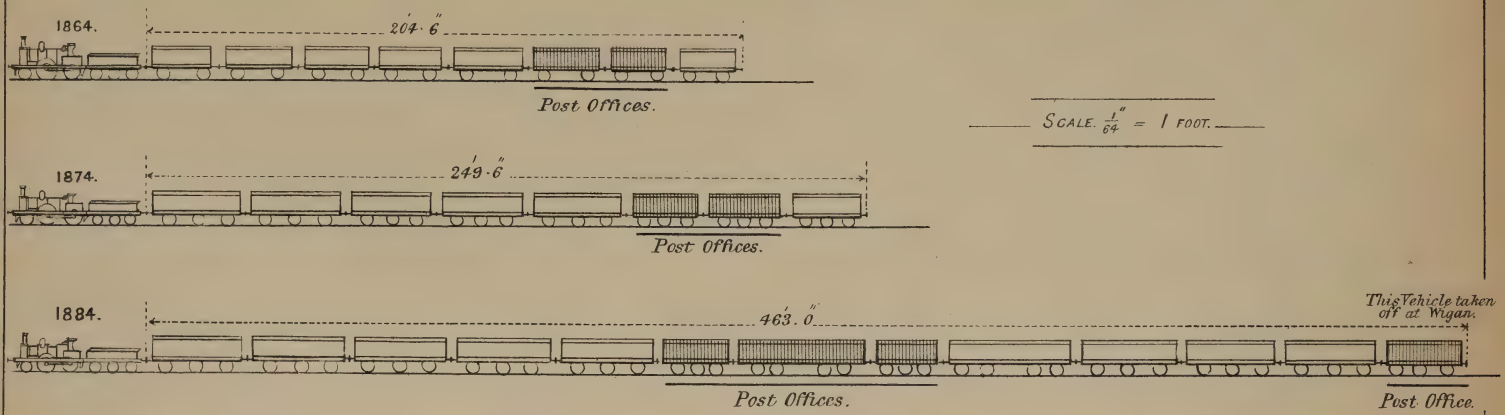
communication. There could be no doubt that this improvement was a great civilising influence. The trade of the country, and its education (using the word in its larger sense), had both benefited by it, and the improvement had in fact been so great that the England of twelve or thirteen years ago could hardly be recognised as the England of the present time. The services which railway managers and chiefs had rendered to the country were so great, that they ought to be fully recognised in all discussions on the subject. Whatever complaints were made from time to time, with more or less justice, by different classes, it must at least be acknowledged that in the matter of express service an enormous improvement had taken place, and he believed that no other country in the world derived such advantage from its railway system as this country, in the way of accommodation to the public.

Sir R. W. Rawson said, if Mr. Findlay and Mr. Webb would give to the Council the tables from which they quoted, they would form a very valuable appendix to the paper.*

Lieutenant Willock, in reply, thanked the Society for the very kind way in which the paper had been received. With regard to Mr. Price Williams's remarks, that he had said but little about the complete arrangements of traffic, &c., which affected the speed of trains, he had only attempted to deal with the parts of the subject that an outsider could obtain knowledge of; the other points could only be properly treated by a person who had a practical knowledge of the working of railways. With regard to the conveyance of third class passengers by fast trains, he had looked at an old "Bradshaw" of 1871, and he noticed that they were carried by more fast trains on the northern than on the southern and western lines. He thought it would be a very bad thing indeed for the country if all the railways were managed by one body. The Paris and Lyons Railway had a monopoly from Paris and Marseilles, and they only ran two good trains during the day, both for first class passengers only, and even these were not really fast trains according to our ideas, as their journey-speeds were only about 36 miles per hour. Third class passengers took about twenty-two hours on the road, the speed being under 25 miles per hour. He could scarcely agree with Mr. Foxwell that all stoppages could be reduced to one minute, for passengers needed refreshment.

* Mr. Findlay in accordance with this suggestion has kindly furnished the Tables II and III in the appendix to this discussion, and the accompanying Diagram.

DIAGRAM SHEWING THE LENGTH AND WEIGHT OF THE LIMITED MAIL TRAIN IN 1864, 1874, 1884.



	1864 LIMITED MAIL	1874. LIMITED MAIL	1884. LIMITED MAIL.
Total length of train over all not including engine	204′ 6″	249′ 6″	463′ 0″
Number of Carriages	8	8	13
Average length of each carriage over buffers	25′ 6 1/2″	31′ 2 1/4″	35′ 7 3/4″
Total weight of train not including engine	T. C. qrs. 54 19 1	T. C. qrs. 75 3 3	T. C. qrs. 165 4 1
Average weight of each carriage	T. C. qrs. lbs. 6 17 1 0	T. C. qrs. lbs. 9 8 0 0	T. C. qrs. lbs. 12 14 0 19

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Appendix *to* Discussion *on* Lieutenant Willock's Paper.

Table I.—*Passenger Traffic*, 1871-82.

	London and North Western Railway.				Midland Railway.				Great Northern Railway.			
	Number.	Increase.	Amount.	Increase.	Number.	Increase.	Amount.	Increase.	Number.	Increase.	Amount.	Increase.
1st Class—		Per cnt.	£	Per cnt.		Per cnt.	£	Per cnt.		Per cnt.	£	Per cnt.
1882	2,492,707		553,183		1,901,645		297,434		952,720		179,566	
'71	2,739,777		310,306		1,149,450		205,470		823,558		210,917	
		Decrease.										Decrease.
Decrease	247,070	— 9·02	242,877	78·27	752,195	65·42	91,964	44·75	129,162	15·68	31,351	— 14·86
2nd Class—												
1882	4,096,420		398,130		} (abolished)		(abolished) }		2,070,408		125,060	
'71	5,746,506		391,759						4,004,808		325,121	
										Decrease.		
Decrease	1,650,126	— 22·72	6,371	1·62	—	—	—	—	1,934,400	— 93·43	200,061	— 61·54
3rd Class—												
1882	45,556,133		2,166,422		28,648,490		1,490,929		20,350,060		834,416	
'71	5,861,294		334,773		17,940,895		1,063,304		6,032,265		302,079	
		Increase.								Increase.		Increase.
	39,694,839	673·23	1,831,649	547·12	10,707,595	47·60	427,625	40·21	14,317,795	237·35	532,337	176·22
Total Passenger Traffic and Mails—												
1882	—		3,936,949		—		2,242,458		—		1,410,099	
'71	—		3,124,538		—		1,426,919		—		1,000,203	
	—	—	812,411	7·94	—	—	815,539	57·16	—	—	409,896	40·98
Total Goods and Minerals—	Tons				Tons.				Tons.			
1882	35,351,924		6,229,278		24,238,280		4,875,718		8,733,981		2,014,175	
'71	21,175,602		4,362,515		15,617,618		3,102,783		5,181,170		1,333,128	
	14,176,322	66·94	1,866,763	42·79	9,620,662	55·19	1,772,925	57·14	3,552,811	68·55	681,047	51·10
Miles Open—												
1882	1,775		—		1,375		—		772		—	
'71	1,514½		—		989		—		544		—	
	260½	—	—	—	386	39·03	—	—	228	42	—	—

TABLE II.—*Passenger Train Mileage and Earnings per Train Mile on London and North Western, Midland, and Great Western Railways from* 1871 *to* 1883, *the Results in each case up to the end of* 1882 *being based upon the adjusted Figures shown in the Statements of Accounts of the respective Companies published in subsequent Half Years.*

Railway.	Passenger.			
	Half-Year ending 30th June.		Half-Year ending 31st December.	
	Train Mileage.	Earnings per Mile.	Train Mileage.	Earnings per Mile.
		s. d.		*s. d.*
London & N. Western—				
1871	6,213,654	4 5	6,657,675	5 2¾
'72	6,640,852	4 6¼	7,120,140	5 1¼
'73	6,866,227	4 8¾	7,414,981	5 3¼
'74	7,045,587	4 9¼	7,416,706	5 4¼
'75	7,207,701	4 8¼	7,721,634	5 2½
'76	7,413,254	4 7¼	8,045,701	4 11¾
'77	7,798,489	4 4½	8,224,436	4 11
'78	7,830,086	4 4½	8,315,277	4 11
'79	7,766,157	4 2½	8,321,025	4 8
'80	8,002,673	4 2¾	8,700,221	4 7·418
'81	8,308,331	4 0·994	9,058,191	4 6·360
'82	8,598,244	4 2·003	9,389,561	4 5·975
'83	8,969,727	4 1·172	9,796,002	4 5·557
Midland—				
1871	3,662,160	3 4½	3,783,642	4 1
'72	3,600,321	3 8¾	3,605,936	4 6
'73	3,334,205	4 5	3,609,373	4 11
'74	3,423,539	4 7	3,775,170	4 11½
'75	3,707,026	4 6¾	4,148,494	4 9¼
'76	4,136,421	4 3½	4,721,613	4 6¼
'77	4,486,079	4 1¾	4,869,910	4 4¾
'78	4,563,111	4 1¼	5,057,065	4 3½
'79	4,680,828	3 9¾	5,352,130	3 11½
'80	5,291,322	3 6¾	6,290,723	3 6·603
'81	6,022,486	3 2·296	6,567,845	3 6·373
'82	6,159,417	3 4·530	6,638,928	3 7·009
'83	6,258,604	3 3·739	6,846,796	3 6·764
Great Western—				
1871	3,980,935	5 3½	4,143,212	5 3
'72	4,141,162	5 4	4,408,118	5 2½
'73	4,374,420	5 3	4,454,349	5 5½
'74	4,388,589	5 6¾	4,647,916	5 4¾
'75	4,556,120	5 5¼	4,797,727	5 3½
'76*	6,068,762	5 3¼	6,090,137	5 2¼
'77	6,028,350	5 2	6,152,772	5 2½
'78	6,240,485	5 –¼	6,431,682	4 11¼
'79	6,200,715	4 10¼	6,384,180	4 11½
'80	6,487,360	4 11	6,715,039	4 9¼
'81†	5,434,756	4 7¾	6,988,102	5 1·505
'82	6,661,723	4 8·427	7,123,721	5 1·778
'83	6,881,768	4 7·220	7,416,389	5 1·182

* Great Western absorbed Bristol and Exeter, South Devon, and other lines.

† Great Western half-yearly accounts which had previously been made up to January and July, now made up to June and December.

TABLE III.—*Passenger Receipts of London and North Western, Midland, and Great Western Railways.*

	Statement showing Increase or Decrease of Year 1882 over Year 1874.											
	London and North Western.				Midland.				Great Western.			
	Increase.		Decrease.		Increase.		Decrease.		Increase.		Decrease.	
		Per cnt.		Per cnt.		Per cnt.		Per cnt.		Per cnt.		Per cnt.
Miles constructed	174¼	11	—	—	417¾	36½	—	—	714	46¾	—	—
Passenger train mileage	3,525,512	24¼	—	—	5,277,704	74½	—	—	4,818,308	53¾	—	—
Earnings on excess passenger mileage, 1882 over 1874	1*s.* 3·72*d.*		—	—	1*s.* 9·842*d.*		—	—	3*s.* 10·45*d.*		—	—
Number of passengers and receipts—												
1st class passengers	—	—	640,479	20¾	—	—	—	—	—	—	117,652	5⅓
,, receipts	—	—	£210,298	27¾	—	—	—	—	—	—	£58,948	14
2nd class passengers	—	—	2,093,213	34	—	—	—	—	2,734,971	51	—	—
,, receipts	—	—	£166,397	29½	—	—	—	—	£203,250	40¼	—	—
1st and 2nd class passengers	—	—	2,733,692	29½	—	—	2,067,680	52¾	2,617,319	34½	—	—
,, receipts	—	—	£376,695	28½	—	—	£122,438	29¼	£144,302	15½	—	—
3rd class passengers	11,226,246	32¾	—	—	7,292,701	36	—	—	11,512,629	44	—	—
,, receipts	£439,826	25¾	—	—	£465,648	45¾	—	—	£582,964	49	—	—
Total passengers of all three classes	8,492,554	19½	—	—	5,225,021	21½	—	—	14,129,948	42	—	—
Total receipts from all three classes	£63,131	2	—	—	£343,210	24	—	—	£727,266	34½	—	—

Note.—These figures exclude receipts from season tickets, parcels, mails, &c., in each case.

A Statistical Review *of* Canada, *including its* Confederated Provinces.

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[Read before the Statistical Society, 20th May, 1884. Robert Lawson, Esq., a Vice-President, in the Chair.]

CONTENTS:

	PAGE
I.—Introduction	312
II.—Fisheries	315
III.—Fur Trade	317
IV.—Lumber Trade	318
V.—Landowners and Agricultural Holdings	319
VI.—Agricultural Produce	320
VII.—Live Stock; Meat Supply	320
VIII.—Mineral Products	321
IX.—Population	322
X.—Immigration	324
XI.—Manufacturing Industries	326
XII.—Shipbuilding; Vessels Owned	326
XIII.—Canals	327
XIV.—Railways	328
XV.—Trade and Navigation	329
XVI.—Educational Statistics	331
XVII.—Post Office	332
XVIII.—Public Debt	334
XIX.—Revenue	334
XX.—Savings Banks	335
XXI.—Conclusion	335

I.—*Introduction.*

Our colonial possessions, as constituting essential parts of the British Empire, ever demand the interest of thoughtful men. An increasing importance has, in my opinion, attached to them since they became endowed with the privilege of self-government. In learning the art of governing themselves they will make some mistakes; but they will discover and that speedily, how to remedy these. It is impossible to believe that any body of business men, having the advantage of history and example to guide them, shall long remain in ignorance of what is best suited to their interests. That course they will pursue, and ought to pursue, in spite of all obstacles and all prejudices to the contrary.

Canada, as being one of our earliest (as it is by far our largest) colonial possessions—colonial in the strict sense of the term; and as being peopled mainly with an English speaking race, chiefly emigrants from our own shores, and their direct descendants—has a preponderating claim to our consideration. Its constituent provinces have quite recently been confederated and bound by common interests, and they constitute a dominion of vast magnitude, destined to become the home of millions of the British race.

This last fact alone should develope a never ending interest in Canadian affairs; but this is not all, Canada is at this moment engaged in an enterprise which has a most important bearing not only upon her own internal development, but perchance upon the destinies of the British Empire. The Canadian Pacific Railway for the first time opens up to settlement millions of acres, I might almost say millions of square miles, of land suitable for settlement, as being within the isothermal line, and therefore suited to grain growing and agricultural enterprise generally. And it also for the first time opens up a direct route, entirely under the protection of the British Flag, to India, Australia, and the East generally. The value of this prospectively it is not easy to overrate. Its importance may indeed become imminent at any moment. A little more oblivious blundering, and the transit through Egypt interrupted, then the true value of the Canadian Pacific Railway becomes apparent to all. Its eastern depôt at a port never closed (Halifax, with its commodious harbour); its western exit, protected by Vancouver's Island, and the Pacific Ocean is placed at our command; and thereby India, the Australian colonies, and all else that we hold of value there are brought within the range of rapid and uninterrupted communication. This is surely a consummation devoutly to be wished. Canada from this point of view becomes the centre of our United Empire: the base of operations offensive and defensive if ever, unfortunately, occasion shall arise. But I will not dwell upon the war aspect of the case. The peace prospect presented by this opening up of a Canadian Pacific Railway is equally grand. Here (in Canada) is an outlet for all who are willing to toil, and shrink not from the hardships of colonial life: or feel that these are fully compensated for in the political freedom gained. Here may be raised food necessary to supply, at a most moderate price, all the under-fed millions (if such there be) in this country. Here too the "land "question" may be tested in all its bearings, either without the attraction of confiscation, or with it, if the Indian races at present in possession of the soil are to be regarded as its rightful owners. Problems of co-operation may also be tested without interference with vested interests. In this extended settlement of Canada—now for the first time rendered possible—there is then much to interest us all.

Some of the last suggested problems will necessarily take several generations to solve. The interest in these is rather in the future than the present. But are there no problems of present interest waiting solution? Is there not a great problem in national finance arising out of the fact that the Dominion Government has expended in connection with its north-western territories since 1868-69,

nearly 9 millions sterling ($44,952,190); and has received in respect of the same less than 2 millions sterling ($9,342,188)? May it not be fairly asked is this policy of speculating on the future a wise one? Towards answering this question, one pregnant fact may be noted. In 1870 the receipts in the Post Office department of the north-west were $4,455; while in the financial year 1882-83, they had increased to $132,239. Then is there not the greater, because the more immediate, problem of protection *versus* free trade?

I have not indeed shaped this paper upon controversial lines. I have preferred here to proceed upon a solid foundation of facts rather than enter upon the shifting expedients of party strife. What is required in the case of a country making great and sudden departures from established usages is a sort of *datum line* of fact, which all may agree to adopt as a base for future comparison. The main purpose of the present paper is to furnish in concentrated form statistics concerning all the leading industries of Canada, as they admittedly were up to and including the year 1879; and then in comparison with these, subsequent returns may be adduced, and deductions drawn therefrom as occasion may demand. It will be remembered that I adopted a precisely similar course regarding the United States some twenty years since, during the civil war there, in two papers read before this Society, and printed in its *Journal*.* The statistics there presented have been used as standpoints of comparison in that country and in this ever since.

It does not require any great political sagacity to discover that the real problem which Canadian statesmen have before them for practical solution is a twofold one. Will the opening up of the Great North-West induce a settlement of the territories, and an exchange of commodities, sufficiently rapid and sufficiently extended, to defray the annual charge upon the capital expended for the purpose? And will the population so settled be able and willing to consume the manufactured commodities of the Dominion in such a ratio as to prevent over-production, and the consequent financial and social disruption which follow upon such an event? The facts contained in the present paper will assuredly be too limited in point of time to enable any accurate deductions to be drawn at present on either of these heads; but they will not be without their use if they afford indications and forewarnings on points so vital to the national interests.

The following seems a convenient order in which to treat the data I have brought together:—

* "Recent Financial and Taxation Statistics of the United States," vol. xxvi, pp. 154—66 and 281—95.

II.—*Fisheries.*

The fisheries have played a prominent part in the history of Canada. When the supposed discovery of gold by the early voyagers had proved a delusion, and the region of Labrador seemed likely to be abandoned to its former desolation, the real discovery was made that there was a wealth in its waters greater, or more lasting, than any which had been associated with its shores. Those who are familiar with the history of Newfoundland (not yet indeed one of the confederated provinces), know how its fisheries developed in the sixteenth century; how the fishing fleets of the catholic countries of Europe congregated in its waters. The observances of religion in the matter of fish diet led directly to the development of trade, and so to the settlement of the country, for it is more than doubtful if France would have clung so tenaciously to Canada but for this question of its fisheries, and perhaps also its furs.

In more recent times the fisheries have constituted a bone of serious contention with the United States. I am not going to speak of the subject in a controversial spirit. The differences heretofore have been adjusted in the only spirit which becomes great and enlightened nations, viz., by treaty. There was awarded to Canada, under the Washington Treaty of 1872, as the value of the rights of free fishing during the ten years prospective currency of that treaty no less a sum than $5\frac{1}{2}$ millions of dollars; fixing the annual rental at $500,000, or 100,000*l.* per annum.*

But not only do the seas which surround the eastern provinces abound with fish, these are equally abundant in the great lakes and the majestic rivers of the Dominion—furnishing a source of food supply of the utmost value, and as will be seen also an element of large commercial gain. In British Columbia too the fishery is growing into an important industry.

I meet with no very early returns of the products of the Canadian fisheries; probably from the obvious difficulty of procuring exact data as to an article carried away direct to other countries in the vessels by which they were taken. In 1871 their produce as an item of trade was given at $7\frac{1}{2}$ million dollars, while the quantity used for domestic supply was estimated at the further value of $600,000. The entire proceeds hence reached 8 million dollars, while the capital embarked therein was stated to be 15 million

* Where dollars are reduced to sterling in this paper, 5 are taken as equivalent to 1*l.* unless otherwise stated. But I have generally retained the dollar currency, as being more convenient for future comparison. Where the dollars had been converted into sterling by the authorities quoted from, I have not re-converted into dollars: not being certain of the rate of conversion employed.

dollars, and the number of persons employed about 87,000. There was also a yield of 678,844 gallons of fish oil. These figures were an increase upon the previous year.

We will now review the details of the yield of 1882:—

Cod	quintals	1,130,771
Haddock, hake, and pollock	„	192,539
Herrings	brls.	574,503
Gaspareux	„	28,856
Mackerel	„	248,031
Sardines	„	25,384
Halibut	„	2,799
Salmon	„	73,897
Shad	„	10,385
Eels	„	8,012
Whitefish (from the lakes)	„	48,781
Trout	„	64,324
Other fish	„	170,052
Canned lobsters	ltrs.	11,983,648
Lobsters	brls.	189,127
Fish oil	gals.	870,328

The total value of the production of the fisheries (1882) was $16,824,092, being an increase over that of the preceding year of 1,006,929*l.*, exclusive of the catch in Manitoba and the north-west territories, of which there are no returns. The Province of Nova Scotia came first with a production valued at $7,131,416, the next in order, though at a considerable distance, being New Brunswick with a production valued at $3,192,338. Quebec, Prince Edward Island, and British Columbia followed in order, each with a production the value of which was somewhat under $2,000,000. It is estimated that fish to the value of $4,885,000 was consumed by the Indian population alone. Fish was exported to the value of $7,697,608, of which all but $15,529 was made up of fish produced in Canada. The United States received the largest share of the exports, the value being $2,454,323, though Great Britain was not far behind with a value of $2,130,232. The next largest consumers were the British West Indies, which took fish to the value of $1,188,819. The total value of fish imported into Canada in 1882 was $1,231,917, and upwards of half this quantity came from the United States. An increased product from the Province of British Columbia is reported; the total number of cases of canned salmon produced there amounted to 255,061, and upwards of 5,000 barrels of salted salmon were also packed there. The demand is rapidly increasing for this latter kind of fish, and the British Columbia inspector considers that there is a broad field

open in connection with this industry for steady fishermen of moderate means.

The ships employed in the trade in 1882 were 1,147; the men on board the same 8,440. The boats 30,427, and the men on board these 43,621; the shoremen directly employed in the trade 7,992. The number of fathoms of nets was 3,150,259, and there were 3,868 fascines. Here the men directly employed seem to be only 60,053, against 87,000 in 1871. The latter was probably an estimate, and may have included the hands engaged in building the boats, &c., employed.

It is obvious that the fisheries must have largely aided in the development of shipbuilding, not only of the vessels employed in the catching, but also of those engaged in the carrying.

It is necessary to bear prominently in mind that the figures here given do not include the important fishing and seal trade of the Province of Newfoundland—wherein the fishery interests of Canada originated.

III.—*Fur Trade.*

During the last century and early in the present this was a great industry. It was largely monopolised by the "Hudson Bay "Company" (chartered by Charles II in 1670), and later by the rival "North Western Company," founded in 1783.* The agents of these competing companies established trading stations and reared forts in many inhospitable regions. They cultivated the habits of barter with the native tribes, and otherwise prepared for the advent of the "settler." But with the settlement of the country and the expansion of agriculture, the domain of the wild animal was curtailed. The furs secured by the Indians were, during the French occupation, brought down to the annual fairs at Montreal and there disposed of. Later they found an outlet, in the summer months, by way of James's Bay (south of Hudson's Bay) through Hudson's Straits, by the company's ships. There is a proposal to utilise this route for emigration and commercial purposes. By means of the Canadian Pacific and the Intercolonial Railways, the fur trade from the North-West may find increased facilities. In 1871 the furs exported from Canada were valued at $1,633,501.

In 1881 the value of furs was stated at $987,555, to which the unsettled territory contributed $428,177; the Province of Quebec $163,310; British Columbia $153,442; and the Province of Ontario $129,578; Manitoba $80,452; Nova Scotia $17,177; New Brunswick $13,895; Prince Edward Island $1,524.

* These two Companies were amalgamated in 1821.

The export of furs for the year ending 30th June, 1883, amounted in value to $1,098,904, viz., from Ontario $260,641; Quebec $218,272; Nova Scotia $45,891; New Brunswick $4,226; Manitoba $378,426; British Columbia $191,448.

I have already mentioned that the fur trade of Canada was regarded as of importance by France. The author Labontau said: "Le Canadas ne subsiste que par le grand commerce des "pelletries."

IV.—*Lumber Trade.*

The production of timber in the Dominion has been for many years, and still is, very great. At the close of the first quarter of the present century it was ascertained that the capital embarked in the business at Quebec amounted to 1,125,000*l.* sterling. This sum had been expended in saw mills, timber ponds, and other needful appliances. Now saw mills prevail on every stream in Eastern Canada, and are rapidly finding their way westwards. It is estimated that there are fully 1,000,000 square miles of timber lands remaining to be reduced. The export of timber in 1874 reached the aggregate value of about $5\frac{1}{4}$ millions sterling; and of which about one-half found its way to Great Britain, about one-third to the United States, and the remainder to other European countries. British Columbia is now being rapidly opened up for this trade. Professor Davison has estimated 110 millions of acres (or two-thirds of the whole province) are covered with timber suitable for commerce. That province in 1880 produced 200 millions feet of prepared timber, of which three-fourths were sent to California, and the remaining one-fourth either used at home or sent to other countries.*

The timber trade in its various ramifications is one of the most important industries of Canada. It affords employment to a large population, and more especially in the winter, when other occupation is not available. In this sense it is of essential service to the poor. But in bad agricultural seasons many farmers find employment in it. For ships it affords a never failing cargo. All the branches of timber industry, from felling and rafting, to sawing and shipping, fall under the designation of "Lumbering."

The following are the details of the quantities of the different sorts of timber brought into the market, as returned for 1881, but presumably resulting from the season of 1880:—

* The Douglas fir or Oregon pine is the most valuable commercial tree. It frequently exceeds 8 feet in diameter above the ground, and rises to a height of from 200 to 300 feet, forming large and dark forests. The western hemlock and red cedar are the other important trees of the province, both of which, the latter especially, grow to a great size.

Square pine, white	cubic feet	40,729,047
„ red	„	2,815,755
Square oak	„	5,670,894
Tamarac	„	4,653,575
Birch and maple	„	4,414,795
Elm	„	3,191,968
Walnut, black	„	59,032
„ soft	„	754,219
Hickory	„	387,619
All other timber	„	49,956,958
Pine logs	No.	22,324,407
Other logs	„	26,025,584
Masts, spars, &c.	„	192,241
Staves	M.	41,881
Lath-wood	cords	98,311
Tan bark	„	400,418
Firewood	„	10,993,234

All the provinces contributed in a greater or less degree to these totals; but Ontario contributed approximately one-half of the whole.

V.—*Landowners and Agricultural Holdings.*

It has been the peculiar feature of Canada, as of most newly settled countries, that those who settle become the owners of the soil. The first statistics I meet with on this point relating to the Dominion are in 1831, when there were 57,891 proprietors of real property, against 50,824 families engaged in agriculture. The number of farm servants employed was 7,602, indicating that the greater proportion of the agriculturalists were small farmers. The persons engaged in commerce were then returned as only 2,503.

In 1881 the number of *owners* had increased to 588,973; the number of acres owned was 67,645,162; the number of houses 712,440; of warehouses and factories, &c., 110,170; barns and stables 860,895. The *occupiers* were 464,025; of these 403,491 were owners, and 57,245 tenants; while 3,289 were employés.

The occupiers of	10	acres and under	were			75,286
„	11	„ to	50	acres	were	93,325
„	51	„	100	„		156,672
„	101	„	200	„		102,243
„	200	„ and over				36,499

As to the condition of the lands—

	Acres.
Total occupied	45,358,141
„ improved	21,899,181
Under crops	15,112,284
Pasture	6,385,562
Gardens and orchards	401,335

VI.—*Agricultural Produce.*

The agricultural produce returned for 1881, but presumably the crop of 1880, was as follows:—

Wheat, acres sown		2,366,554
„ spring yield	bshls.	12,102,817
„ winter „	„	20,247,452
Barley „	„	16,844,868
Oats „	„	70,493,131
Rye „	„	2,097,180
Peas and Beans „	„	13,749,662
Buckwheat „	„	4,901,147
Corn (maize) „	„	9,025,142
Potatoes, acres sown	No.	464,289
„ yield	bshls.	55,268,227
Turnips „	„	39,059,094
Other root crops, yield	„	9,192,320
Hay, acres sown	No.	4,458,349
„ yield	tons	5,055,810
Grass and clover, seed yield	bshls.	324,317
Flax and hemp	lbs.	2,056,353
„ seed	bshls.	108,694
Tobacco	lbs.	2,527,962
Hops	„	905,207
Fruits—Apples	bshls.	13,377,655
Grapes	lbs.	3,896,508
Other fruits	„	841,219
Maple sugar	„	20,556,049
Honey	„	1,875,745
Home-made butter	„	102,545,169
„ cheese	„	3,184,996

Under this head too are classed—

Home-made cloth and flannel	yds.	7,040,250
„ linen	„	1,293,802

VII.—*Live Stock; Meat Supply.*

The live stock devoted to labour consisted in 1881 of 857,855 horses, 201,503 colts and fillies, and 132,593 working oxen.

The live animals constituting farming stock consisted of 1,595,800 milch cows, 1,786,596 other horned cattle, 3,048,678 sheep, and 1,207,619 swine.

The animals killed or sold for food and for export during the year were 657,781 cattle, 1,496,465 sheep, 1,302,503 swine. Thus while there were two years' consumption of sheep in hand, there was less than one year's consumption of swine.

The wool produced during the year was 11,300,736 lbs.

The cattle *export* trade is becoming a growing one, as the following figures show: 1882, horses exported 21,006, value

$2,358,887 (1875, exported 4,382, value $460,672); 1882, horned cattle exported 62,337, value $3,285,452 (1875, number 38,968, value $823,522, and much smaller in the three following years). 1882, sheep, number 311,669, value $1,228,957; (1875, number 242,438, value $637,561, much smaller in 1876); 1882, swine, number 3,263, value $10,875 (1875, number 16,779, value $152,252).

The swine are now slaughtered and salted before being exported.

The total value of exported live stock in 1882 was $6,884171 as against $2,074,007 in 1875. A considerable but decreasing number of cattle and live stock are *imported* every year for breeding purposes.

The Live Stock Exports for the Year ending 30th June, 1883, were as follows.

	Number.	Value.
		$
Horses	13,500	1,697,901
Horned cattle	67,060	3,995,090
Sheep	308,662	1,392,279
Swine	3,858	12,281

VIII.—*Mineral Products.*

In Nova Scotia gold was discovered in 1861, and this led to a sudden influx of emigration; and again there is a note of recent discoveries in the eastern provinces, and at Quebec. In the former territories of the Hudson Bay Company it has long been understood that there are most extensive deposits of copper, waiting only facilities of conveyance for profitable working. But the region of future mineral wealth, far beyond all that has heretofore been realised, may be assumed to be in the Rocky Mountain section of British Columbia. The Canadian Pacific Railway will at an early period render these rich deposits available.

But it is not alone in what are known as the precious metals that mineral wealth consists. Iron and coal are as essential to national development as gold. Petroleum has probably added nearly as much to the wealth of the United States during the last twenty years as all the gold and silver of Colorado and California. It was, if I remember rightly, in the Province of Ontario in 1859-60 that petroleum was first discovered in quantities sufficient to pay for the working. Salt, again, is a commodity of vast importance in connection with the fish curing industry. While building stone and granite are essential to ornamental construction and the improvement of towns. In all these the Dominion abounds.

The returns for 1882 embraced the following:—

Gold	ozs.	70,015
Silver	„	87,024
Copper ore	tons	8,177
Iron „	„	223,057
Pyrites	„	20,770
Manganese	„	2,449
Other ores	„	5,924
Coal	„	1,307,824
Plumbago	„	28
Gypsum, lump	„	183,076
Phosphate of Lime	„	14,747
Mica	lbs.	16,076
Petroleum, crude	gals.	15,490,622
Salt	brls.	472,074
Grained marble	cubic ft.	40,126
Building stone, for dressing	„	8,141,227
Roofing slates	squares	10,536

In contemplating these results the mind is carried back to the late Sir William Logan, and the geological museum he founded a generation since in Montreal.

IX.—*Population.*

The growth of the population of the Dominion has been, of recent years especially, most surprising—due largely of course to immigration. I propose briefly to review such shadows of the past as are available. In 1674 the population did not reach 8,000, including such of the Indians as had settled down with the ordinary population; another estimate however gives to Lower Canada, two years later, 8,415. In 1708 the population was stated to be 15,000, and in 1713 25,000. In 1760 the population of Canada was described as being 65,000, mostly inhabiting narrow strips of territory on the banks of the St. Lawrence, and chiefly occupied in agriculture. The population in 1776, at the period of the declaration of independence by the American Colonies, was probably less than 100,000; and it very speedily increased from that time.

In 1811 the first census of the population of Upper Canada was taken. The number was returned at 77,000. The war with the United States at that period tended for a time to check the growth; but in 1823 it was returned by authentic enumeration at 151,097, and ten years later (1833) at 296,544—showing an increase of 145,447 in the decade. In 1842 the population of Upper Canada was found to be 486,055, with 1,927,816 acres under cultivation; in 1852 it had increased to 952,000, with 3,620,851 acres under cultivation. Such was the unexampled progress of this largely Anglo Saxon community.

As to Lower Canada no such statistics are available; but it may be stated generally that the progress was slow—certainly by comparison.

We now reach a period when the population of the Dominion can be regarded as a whole; but it will be convenient to note the progress of the separate provinces:—

Province.	1871.	1881.	Increase.	Rate of Increase per Cent.
Quebec	1,191,516	1,359,027	167,511	14·6
Ontario	1,620,851	1,923,228	302,377	18·6
Nova Scotia	387,800	440,572	52,772	13·6
New Brunswick	285,594	321,233	35,639	12·4
Prince Edward Island	94,021	108,891	14,870	15·8
Manitoba	18,995	65,954	46,960	247·0
British Columbia	36,247	49,459	13,212	36·3
The Territories	—	56,449	—	—
Totals	3,635,024	4,324,810	633,341	18·98

The population of 1881 consisted of 2,188,854 males, and 2,135,956 females. It was mainly composed of the following nationalities: French settlers 1,298,929;* English 881,301; Irish 957,403; Scotch 699,863; German 255,319; Dutch 30,412; Indians 108,457; African 21,344; the remainder composed of small nationalities mostly from the north of Europe.

In 1871 the Indians of various tribes resident in Canada were estimated at 85,000. In 1876 more exact returns had been obtained, and the number was given at 91,910, of whom 29,826 were in the five older provinces; 31,520 were in British Columbia; 13,944 in Manitoba, under treaty; and there were about 10,000 untreatied between Peace River and the United States Boundary. Of the population in the older provinces 7,099 were children, and of these 2,105 were attending school. At the census of 1881 the number of Indians in the Dominion was 108,547—of these 25,661 were in British Columbia, and 56,239 in Manitoba and the North-West Territories.

The Indians in the five older provinces owned real estate to the value of $7,633,708; owned invested capital to the extent of $2,844,972; and had personal effects estimated at $489,234.

The following additional facts relating to the density of population and the proportion of the sexes, drawn from the census of 1881, have considerable interest:—

* Viz., 1,073,820 in the province of Quebec, and the remaining 225,104 scattered through the rest of the Dominion.

	Persons to Square Mile.	Acres to a Person.	Acres of Unoccupied Land to a Person.	Females to 100 Males.
Quebec	7·2	88·8	79·5	100·4
Ontario	18·9	33·8	23·8	96·9
Nova Scotia	21·0	30·3	18·1	99·7
New Brunswick	11·8	54·1	42·2	95·7
Prince Edward Island	51·0	12·5	2·2	98·9
Manitoba	0·53	1,195·5	1,159·3	77·2
British Columbia	0·14	4,456·9	4,409·5	67·6
The Territories	0·02	30,219·3	30,213·7	100·7
Averages for Dominion..	1·24	513·5	503·0	—

Amongst the social facts revealed by the census of 1881, were these: The married numbered 1,380,044; the widowed 160,330; the unmarried 2,784,396, the larger portion of which would be children. The proportions of the sexes, now seen by the last table to be so nearly equal, did not always present this feature. I have the returns only for Upper Canada. In 1821 the males were 65,792, the females 56,795; in 1828, males 99,465, females 89,093; in 1830, males 151,081, females 100,386.

Canada for the purpose of the census was divided into 192 districts, and 2,139 sub-districts.

The religious denominations of the people were (1881) reckoned as follows: Roman Catholics, 1,791,982; Presbyterians, 676,155; Adventists, 7,211; Baptists, 225,236; Free Will Baptists, 50,055; Mennonites, 21,234; Brethren, 8,831; Church of England, 574,818; Congregationalists, 26,900; Disciples, 20,193; Episcopal (reformed), 2,596; Jews, 2,393; Lutherans, 46,350; Methodists of all classes, 742,981; Pagans, 4,478; Protestants, 6,519; Quakers, 6,533; Unitarians, 2,126; Universalists, 4,517; no religion, 2,634; other denominations, 14,269; not given, 86,769. Total, 4,324,810. There is no State church in the Dominion.

X.—*Immigration.*

There has been a continuous, as also a considerable emigration from the United Kingdom, as from various other parts of Europe, to Canada. The history of this movement of the population it is impossible to trace with any degree of minuteness. In the first year after the peace with Great Britain and the United States, the number of emigrants into Canada was 1,250. In 1819, no less than 12,907 landed in Quebec; in 1825 it was 8,741, while into the United States the same year the number was but 5,551. In 1834 the number of emigrants into Canada was 40,060, some 7,000 greater than into the United States the same year. In 1847 the number was 89,562; in the following year but 27,939. In 1851 it

was 47,056. In 1861, 12,707; 1871, 32,671; 1878, 10,697; 1880, 24,997; 1881, 30,228; 1882, 44,850; 1883, 45,966.

It requires to be stated that these figures only embrace the immigration by way of Quebec and the St. Lawrence. There are other points of ingress to Canadian territory, viz., by way of Halifax (Nova Scotia), St. John (New Brunswick), Portland (Maine); many points on the United States frontier, and by way of British Columbia. Taking all these sources into account, the Minister of Agriculture gives the total immigrants in the years named, viz., 1878, at 29,807; 1880, 38,505; 1881, 47,991; 1882, 112,458; 1883, 133,624.

The nationalities of the European immigrants into Canada constitutes a point of interest. For the last four years they have been as follows:—

	1880.	1881.	1882.	1883.
English	11,059	13,154	20,881	21,897
Irish	3,183	3,785	8,195	12,095
Scotch	2,875	2,800	4.617	3,980
Germans	307	530	1,024	1,434
Scandinavians	7,402	9,600	8,279	4,763
French and Belgians	27	104	50	306
Icelanders	71	118	129	1,413
Russians	70	22	270	56
Swiss	—	—	—	22
Jews	—	—	1,375	—
Other origins	3	45	30	—
	24,997	30,158	44,850	45,966

The number of emigrants from European countries naturally varies with the condition of home industries, and in some degree with other social and political causes. That all persons who are suited to the requirements of a country where labour affords the most ready road to competency, can find a steady demand for such labour, is a fact of significance. Many have gone, and still continue to go, who are not suited to colonial life; and this is a circumstance which has led to much disappointment.

On analysis of the returns for 1873, the heads of families emigrating to Canada consisted of:—

Farmers	1,470
Labourers	6,202
Mechanics	7,662
Clerks and traders	62
Professions	7
Total	15,403

The proportions seem to be undergoing a change. Formerly

there were many more labourers, many fewer mechanics, and also more farmers. The class of persons for whom openings are presented, may be ascertained with certainty by applying at the Canadian Emigration Office, Victoria Street, Westminster, and thus much disappointment prevented.

XI.—*Manufacturing Industries.*

While the natural products of the Dominion have been reviewed in some detail, it may be expected that I shall be equally explicit regarding its manufacturing industries; but this is impossible, for several reasons—chiefly that of space. That progress is being made in a greatly accelerated ratio is obvious to all who visit the great towns—more especially Montreal, Toronto, Hamilton, and London. All I can attempt to do here is to produce a summary of aggregate results of a decade 1871-81; taking note that the present commercial policy of Canada was only adopted in 1879:—

	1871.	1881.
	$	$
Amount of capital invested	77,964,020	165,302,623
Value of raw material used	123,907,846	179,918,593
Aggregate value of productions	221,617,773	309,676,068
Number of persons employed*	187,942	254,935
Aggregate wages paid	40,851,009	59,429,002
Average wages for each person	217	233

* The number of persons employed includes men, women, and children. It will be in the decade 1879-89 that the progress, whatever it may be, will be revealed in full force.

XII.—*Shipbuilding; Vessels Owned.*

Canada has now become the "fifth maritime nation," that is to say its merchant fleet is only exceeded by four others nations. This is a striking fact, and is worthy of some elucidation. As early as 1723, shipbuilding was a branch of industry here. In that year six merchant ships and two men-of-war were built in this colony. In 1752 a 74-gun ship was built at Cape Diamond, (Quebec), but it was wrecked in the launching. In 1810 no less than twenty-six vessels, having an aggregate of 5,836 tons, were built in the provinces. In 1812, thirty-seven vessels were built at Quebec. But in 1820 only seven were built. In 1825 there were built sixty-one vessels, with an aggregate capacity of 22,636 tons; in 1830 but nine vessels, with 3,250 tons' capacity, were built. These fluctuations were occasioned by many and sometimes combined circumstances, such as peace and war, the restrictions or otherwise of the shipping acts.

In 1853 the trade revived, and there were built at Quebec alone forty-eight ships, tonnage 49,000 tons, value 500,000*l.*, being an increase during the year of twenty-two ships, and in value 340,000*l.*

The development of the fisheries in the eastern provinces has, in recent years especially, given great stimulus to shipbuilding; but on the other hand the increasing use of iron ships has diverted this industry to some extent.

I have not been able to meet with reliable returns of the vessels owned by the various Canadian provinces in the earlier half of the present century.

In 1878 the shipping and tonnage registered in each of the provinces of the Dominion was as follows:—

	Vessels.	Tons.
Nova Scotia	3,003	553,368
New Brunswick	1,142	335,965
Quebec	1,976	248,349
Ontario	958	135,440
Prince Edward Island	322	54,250
British Columbia and Manitoba	68	5,643
Total	7,469	1,333,015

In 1881 the number of seagoing sailing vessels owned in the Dominion was 3,909, having an aggregate tonnage of 860,450 tons, the average size or capacity being 220 tons. The number of steam vessels owned was 721, with an aggregate tonnage of 200,023 tons, giving an average capacity of 277 tons. Of barges and such other craft there were 1,782, with an aggregate tonnage of 96,468 tons, presenting an average capacity of 54 tons. Hence the total of vessels owned was 6,412 (being less than in 1878), with an aggregate tonnage of 1,156,941 tons, being also less than in 1878.

XIII.—*Canals.*

The necessity for canals in Canada was a very early one. It was only by their means, in consequence of the frequent recurrence of rapids in the St. Lawrence, that the full advantages of that great river could be obtained even in open weather. By the aid of ten canals, with an aggregate length of $71\frac{3}{4}$ miles, but presenting great difficulties of construction in some cases, the lake and river system was made continuously navigable for 2,384 miles. This system extends from the Straits of Belle Isle to Thunder Bay, at the head of Lake Superior. Some account of the construction of these canals would be interesting; but the system, valuable as it has been in earlier years, important as it is even yet in the cheap

conveyance of manufacturing products, is on the decline; railways are superseding them.

Traffic on Canadian Canals, 1872-82.

Year ending	Tons of Freight.	Number of Passages.	Tonnage of Vessels.
1872	3,030,233	90,644	3,721,364
'77	2,734,153	146,375	3,576,698
'82	2,542,843	110,787	4,063,247

The tonnage of vessels using the canals is alone increasing, the goods and passengers carried are each decreasing.

XIV.—*Railways.*

The climate of Canada, and the consequent suspension of the means of water transit and communication, rendered railways a necessity. The first railroad commenced in the Dominion dates as far back as 1846, some eleven years after the opening for passengers of the first railway in Great Britain. The Great Trunk Line was commenced in 1847; the Great Western in 1854. The capital for each of these was largely subscribed in the United Kingdom.

The termination of the Reciprocity Treaty in 1866, rendered it incumbent upon the Government of the Dominion to devise means of communication between its several provinces, and still more with the outer world, at all seasons of the year. Hence the necessity for the intercolonial railway down to the harbour of Halifax (which is open for shipping at all seasons of the year), constructed at a cost of 20 millions of dollars, guaranteed by the Imperial Government.* Hence also, combined with many other considerations, the necessity for the Canadian Pacific Railway, which is being pushed forward with such unflagging energy, such indomitable spirit as against all obstacles.

I can only take a brief summary survey of the progress of the railways of Canada. They have been associated largely with its material progress. Facilities of locomotion are indeed of the first necessity to a progressive country. In 1873 there were in working 2,639 miles of railway in the province, the revenue of which was $17,139,876. The subsequent progress has been as follows:—

* While the Imperial Government gave its guarantee for the repayment of this loan, it has never been called to make any advance for the purpose.

	Total Miles of Railways.	Number of Passengers.	Tons of Freight.	Earnings.	Working Expenses.
				$	$
1875	4,826½	5,190,416	5,670,836	19,470,539	15,775,532
'78	6,143½	6,443,924	7,883,472	20,520,078	16,100,102
'82	7,530½	9,352,355	13,575,787	29,027,789	22,390,708

The paid up capital invested in those lines was (1882) $415,611,810; and it hardly needs to be said—for a comparison of the last two columns of the table proclaims the fact—that the rate of dividend earned upon that capital is a small one. The Government of the Dominion has had the broad fact before it—*railways are a necessity!*

The number of passengers carried in 1882 showed the extraordinary increase of 2,408,664, or 34⅔ per cent. upon the number of the preceding year; and the tonnage of freight an increase of 1½ millions of tons, or 12½ per cent. on 1881.

XV.—*Trade and Navigation generally.*

The commercial prosperity of a country is usually judged of, as a whole, by the volume of its imports and exports. In 1759 the exports were valued at 115,415*l.* In 1769 the exports (consisting chiefly of furs, oil, and fish) were 355,000*l.*; the imports (consisting chiefly of British manufactured goods and West India produce) 273,400*l.* The trade then employed 70 vessels. In 1799 there is the record of a large exportation of grain. In 1809 there were 440 vessels, with an aggregate of 87,825 tons, entered at Quebec. During that year, too, the first steam vessel is stated to have entered that port. In the following year (1810) as many as 635 vessels entered the St. Lawrence—tonnage 138,057. In 1812 532 vessels, tonnage 116,687, cleared the port. In 1820 the trade was but slightly greater than in 1812—England was at war with the United States. In 1830 1,016 vessels, with tonnage 261,218, cleared the port. There was an export of 400,000 barrels of flour, chiefly to Britain.

In 1846 the navigation laws of Great Britain were modified, the old restrictive commercial policy was abandoned, and Canada speedily felt the benefit.

The following table shows the development of the commerce of Canada as a whole during the past sixteen years:—

Exports and Imports, 1868-83, *distinguishing Home Consumption Imports, and showing Customs Duty.*

	Total Exports.	Total Imports.	Entered for Home Consumption.	Duty, Import and Export.*
	$	$	$	$
1868	57,567,888	73,459,644	71,985,306	8,819,431
'73	89,789,922	128,011,281	127,514,598	13,017,730
'78	79,323,667	93,081,787	91,199,577	12,795,693
'82	102,137,203	119,419,500	112,648,927	21,708,837
'83	98,085,804	132,254,022	123,137,019	23,172,609

* The export duty, 1873, was $20,152; 1878, $4,160; 1882, $8,809; 1883, $9,756.

Note.—The financial year terminates 30th June.

These figures show considerable fluctuation at the different quinquennial periods. It becomes therefore necessary to review very briefly the more potent causes which have been in operation. We are thus carried back to the "Reciprocity Treaty" made between Great Britain and the United States, largely in the supposed interest of Canada, in 1854. This was made binding for a period of ten years, and could afterwards be abrogated on two years' notice by either side. The United States gave such notice, and the treaty expired in 1866. The desirability of such a treaty regarding articles in ordinary use between two countries with a frontier line then of 1,400 and now of 3,000 miles seems almost obvious; but outside considerations intervened, and although various attempts have been made in direction of renewal, these have always failed. Each country adopts its own tariff, irrespective of the wants and circumstances of its neighbour. The tariff of the United States on certain articles of British produce has been sometimes prohibitive, or nearly so.

In 1867 the confederation of the Canadian provinces obtained the Imperial assent; and on this question all presented an united front, except Newfoundland.

In 1879 the new protective policy of the Dominion came into force. It has been often charged (by politicians and writers on economic questions) that this step was aimed at the United Kingdom. I am not going to raise any issue on that point here, the experiment is much too recent for that. All I propose doing is to show what has been the effect of the policy, quite apart from any intention. A brief analysis of the preceding returns will furnish all that is necessary:—

		Great Britain.	United States.	Total Exports.
		$	$	$
1878	Value of *Exports* from Canada to	45,941,539	25,244,898	79,323,667
'80	,, ...	45,846,062	33,349,909	87,911,458
'82	,, ...	45,274,461	49,940,711	102,137,203
'83	,, ...	47,145,217	41,668,723	98,085,804
1878	Value of *Imports* to Canada (for consumption)...	37,431,180	48,631,739	91,199,577
'80	,, ...	34,461,224	29,346,948	71,782,349
'82	,, ...	50,597,341	48,289,052	112,648,927
'83	,, ...	52,052,465	56,032,333	123,137,019

A survey of these figures furnishes the following results: the *exports* from Canada to Great Britain had, down to 1882, shown a steady decline; in 1883 a reaction took place, and the increase was nearly 1½ million dollars upon the figures of 1878. The *imports* from Great Britain to Canada have very largely increased, while those from the United States had decreased until 1882, but in 1883 showed a very large increase, exceeding by nearly 4 millions of dollars those from Great Britain, and by nearly 8 millions of dollars those of the previous year from the United States. The total *exports* from Canada, which up to June, 1882, had shown a tendency to rapid increase, decreased nearly 4 millions of dollars during the succeeding year, being, however, still nearly 19 millions of dollars above those of 1878; while the aggregate value of *imports*, after showing a great decline in 1880, rebounded in 1882, and show a large progressive increase in 1883. I shall be surprised, but much gratified, to hear any rational solution of these variations. If the modern doctrine that the wealth of a country is to be measured by the extent of its imports over its exports, then Canada is indeed progressing most rapidly. May it prove to be so.

XVI.—*Educational Statistics.*

The provinces of Quebec and Ontario have separate school laws, adapted to the religious elements prevailing in either. Each township of Ontario is divided into several school sections, according to the requirements of its inhabitants. The common schools are supported partly by the provincial governments and partly by local self-imposed taxation and occasionally by the payment of a small fee for each scholar. All teachers must pass an examination before a County Board of Education or receive a licence from the Provincial Normal School empowering them to teach before they can claim any government allowance.

In 1797 a grant of 500,000 acres of unoccupied lands was set apart for the establishing and endowing a university and four

foundation grammar schools; but I have not been able to learn any details of its application.

In the Lower Province about 1830 there were in existence 1,216 schools, having 43,799 pupils—the sexes about equal—about one-half of whom paid from 5*s.* to 7*s.* 7*d.* per month and the other half were educated free. There were 670 male and 635 female teachers. The proportion of inhabitants in each school district varied greatly, as also the proportion of children attending school out of any given population.

In 1874 the public schools of the Dominion had 460,984 pupils, whilst the entire population between the ages 5 to 16 was 504,869, showing that a very large proportion of the children were under process of education.

I regret that I am unable to present later statistics.

XVII.—*Post Office.*

In a newly settled country one of the pressing difficulties is how to provide facilities of intercommunication. For instance, in a locality under process of being reclaimed from the forest or the prairie, the dozen or less of first settlers require communication with the regions they have left. But it is certain that the ordinary revenue obtained will not for some time meet the expenditure involved; yet if no steps be taken no development can arise. The more rapidly a country is being settled up, the more serious may be the excess of expenditure over income. The common exchequer therefore has to bear the burden of the outlay for the common good.

The growth of postal facilities, which is properly regarded as a branch of educational outlay in the Dominion, has been very remarkable. The earliest statistics I have are those for the year 1831; and it it here necessary to give the returns for the lower and upper provinces separately:—

Post office receipts, Lower Canada—letters, 10,494*l.*; newspapers, 566*l.*
„ Upper „ — „ 9,870*l.*; „ 790*l.*

These figures included not only the internal postal rate, but also the British and sea postage. Any net proceeds after defraying expenses was to be remitted to England; but no details on this point are given. The gross amount of *newspaper* postage paid by proprietors or printers of newspapers in Canada that year was 1,022*l.*

In 1868 the number of letters which passed through the post offices of the Dominion was 18 millions; in 1870 it had increased to 24½ millions. A reduction in the rate of postage from 3 to 2 cents (1½*d.* to 1*d.*) had aided materially in producing this result.

The package post was reduced to 6 cents in 1869: produced an

increased income in 1870; the number of parcels carried in fact more than doubled, and amounted to 51,844 in 1870. The money orders rose greatly in amounts remitted; while the growth of the post office savings banks, which was considerable, appeared scarcely to affect the old savings banks.

The correspondence between Canada and the United Kingdom is very considerable. In 1870 the Allan line alone—and much of the correspondence from the western portion of the Dominion passes through the post office of New York—carried 1,215,104 letters, 1,321,718 newspapers, 39,969 books, and 6,400 patterns. There was an increase of 20 per cent. during the year on both letters and newspapers. There has since been a large and progressive increase; but I have not the later figures at hand.

The following figures, arranged by way of comparison, will show the growth of the postal department during the past three years, 1879-82:—

	1879.	1882.
Number of post offices	5,606	6,171
„ miles of mail route	39,598	43,097
„ miles travelled by mail	16,156,034	18,091,996
„ letters by post	43,900,000	56,200,000
„ postal cards	6,940,000	11,300,000
Newspapers from office of publication ....lbs.	4,085,454	4,855,000
„ and miscellaneous otherwise than from office of publication ..... No.	10,664,000	14,730,000
Number of registered letters posted in the year	1,980,000	2,450,000
Amount of postal revenue ..... $	1,534,363	2,022,098
„ expenditure ..... „	2,167,266	2,459,356
„ money order issues ..... „	6,788,723	8,354,152
„ deposit in post office savings banks ..... „	3,105,190	9,473,661

The aggregate of letters and post cards in 1882 showed the remarkable increase of 10 millions, or 17 per cent. over that of 1881. The postal revenue of 1882 showed an increase of $254,935, equal to 12½ per cent. over that of 1881; the total expenditure during the like period only gives about 5½ per cent. increase. The postage revenue in Manitoba nearly doubled during the year. The revenue fell short of the expenditure during the year by $437,258. The increase of revenue during three years had been 20 per cent., and of expenditure only 7½ per cent.

Since 1st June, 1882, the newspapers and periodicals printed and published in Canada, and posted from the office of publication have been *carried free*, a step in advance of any European nationality.

The present rate of postage in Canada is 1 cent (*i.e.*, one halfpenny) for local postage in the cities; 3 cents for the Dominion generally and the United States; 5 cents for Europe.

The following statistics of the post office for 1883 furnish some items differing from those previously given :—

Number of post offices	6,395
Miles of post route	44,643
Annual rate of mail travel in miles	19,465,121
Letters	62,800,000
Post cards	12,940,000
Registered letters	2,650,000
Free letters	2,600,000
Newspapers and periodicals, not from office of publication	7,402,000
Books, circulars, &c.	8,724,000
Parcels post, number of parcels	463,200

XVIII.—*Public Debt.*

The public debt of Canada has grown rapidly of late years. To make the figures appear quite clear and useful for all comparative purposes, a commentary upon the territorial and other changes would be necessary. For present circumstances the following figures as they stand must suffice :—

Year.	Amount Sterling.
	£
1860	13,665,098*
'64	15,616,557
'74	22,567,701
'79	29,789,662
'83	33,013,899

Between 1880 and 1883 nearly 6 millions sterling of debt had been paid off.

XIX.—*Revenue.*

More than half the revenue of Canada is drawn from customs duties, and the remainder from excise and other indirect taxation.

The following table will show the growth of the revenue and expenditure at various illustrative periods :—

Year.	Gross Revenue.	Expenditure.	Customs Revenue.
	£	£	£
1861	2,448,288	2,909,050	—
'70	3,396,934	3,546,921*	2,056,275
'79	4,691,121	6,271,606*	2,687,637
'83	7,457,218	8,820,698*	4,793,662

* Including expenditure from loans on public works, 1870, 387,128*l.*; 1879, 1,176,735*l.*; 1883, 2,835,248*l.*

(The dollars are here converted at the rate of 4*s.* 2*d.*)

* There seems to be some doubt as to how this total is made up. The dollars are here converted at the rate of 4*s.* 2*d.*

XX.—*Savings Banks.*

The deposits in the savings banks give some indication of the prosperity of the lower-middle and industrial classes. The statistics available do not extend over any long period; but such as they are I present them—the results indicating a state of progress I was hardly prepared for.

There are two classes of savings banks: those of the old Dominion before confederation, and the post office savings banks of later introduction:—

	Post Office Savings Banks Deposits.	Tota. Savings Banks Deposits.
	£	£
1880.....	1,894,732	2,210,591
'83.....	2,395,247	5,243,821

The total number of savings banks is 330, the number of accounts 60,063, the average of each deposit $196 as against $184 three years previously.

XXI.—*Conclusion.*

The present paper has made no pretension to furnish a complete review of all the points of general interest affecting Canada. There are the important questions of the administration of justice, taxation, relief of its poor, the militia system, treatment of the Indian tribes, upon all of which much might be said. They must await another opportunity. To prevent misapprehension it may be mentioned that there is no poor law existing in Canada; and hence perhaps there are very few poor, *i.e.*, non-industrious persons. In some matters of secular convenience, such as the supplying of warm air to dwelling houses, in providing burglar alarms, and fire and messenger signals, and in the use of the telephone, as also the electric telegraph for domestic as well as business purposes, Canada is far in advance of ourselves.

Finally, I have to express my obligations to the High Commissioner from Canada, Sir Charles Tupper, and his able *locum tenens*, Mr. Colmer, and to Mr. Bateman, of the Commercial Department of the Board of Trade, for assistance readily afforded in the preparation of this paper.

Discussion *on* Mr. Walford's Paper.

Mr. S. Bourne said he had come not so much to speak, as to lay the foundation for a good deal of the knowledge which he hoped to acquire when, in the course of the autumn, he paid a visit with the British Association to Canada. He would in the first place thank the lecturer for the copious details which he had drawn from various sources and had placed before them. Several important points had been raised by Mr. Walford. As to the grave question with which he started, whether the social and economic condition of the country in the course of a few years would be such as to justify the present large influx of population and expenditure of capital, he (Mr. Bourne) had for his own part no doubt that a very brilliant future awaited the Canadian Dominion, and it was very much to the credit and the foresight of her statesmen that she had thrown herself so very vigorously into the work of preparing for the large influx of population which was likely to visit her shores. Some years ago he read a paper on emigration at the Colonial Institute, the importance of that subject seeming to him at that time to be insufficiently recognised. But the question as to how we were to provide for the surplus population rising up in our midst was now pressing upon our statesmen at home, and it must be remembered that population in this country did not increase in a manner at all creditable either to our sanitary or economic arrangements. There was without doubt a vast waste of human life in this country, arising partly from the insufficiency of our sanitary arrangements, partly from the habits of the people—their herding together in crowded dwellings—and not a little from the loss of life and substance arising from the undue consumption of alcoholic liquors. Every reformation in either of these respects must necessarily tend to a very much more rapid increase of our population, and also increase the necessity of providing an outlet for it. Again, it was evident that skill in manufacture and the amount of capital invested in productive industries were increasing in other countries in a greater ratio than in our own; consequently we were being disturbed in a great measure of the success which had attended our previous history. As a result of this, there was a diminished demand for the employment of our home population in catering for the wants of the world; if not altogether by a diminution in the quantity of goods manufactured, yet certainly in the price which the world was willing to pay for them; in other words, in the margin of profit. All this must force a large portion of our population to seek homes in other parts of the world. This was one of the most cheering prospects for the future. As one who had lived abroad for some years, he rejoiced to live at home now. He would say to all men, "If you can get bread and cheese at home, do not go abroad to look for turtle soup; but if

bread and cheese fail you here, do not despair of getting something far better than that abroad." It was the destiny of the human race to overspread the world, and Canada was a place which would provide for a very large number of the population that we were producing, and which, for economical reasons, would have to be sent away. It was therefore extremely important that the position of Canada, and the means she had of providing for our people, should be fully understood. The two great English-speaking nations, the inhabitants of the United Kingdom and the inhabitants of the United States, were the consumers of the bulk of the produce which Canada parted with, while the English, already large producers of the goods which Canada took from the world, might greatly increase their supplies. He welcomed with very great satisfaction the proposal that the British Association should this year hold its meeting at Montreal. A very large number of our economists, statisticians, statesmen, and other thinking people would visit the colony, and the result would no doubt be productive of very much good. We must look, in the first place, at the capacity of Canada to supply the wants of those who come; and in the second place, her ability to yield a surplus for the supply of other nations. The fur trade, originally one of the greatest importance, might be said to be in process of exhaustion; as the population increased, the supply of furs would become reduced, and the price of sealskin jackets would possibly be something fabulous before our children grew up to wear them. But that was not to be regretted if the land, instead of producing only the wild beasts of nature, was made the means of supporting sentient beings who laboured for the benefit of their species, and thus honoured the Creator Who brought them into existence. Canada possessed two great sources of wealth, one being, undoubtedly, her agricultural resources. As the population increased, there must be a greater demand for food; and in the cultivation of the land was to be found the first source of occupation for those who went there. Bread was esteemed as the staff of life, and nothing that had yet been discovered equalled it in its power of sustaining human life. Secondly, in the development of her minerals, Canada possessed a most important source of wealth. The timber trade would probably, in course of time, to a certain extent decay, and wood was becoming increasingly expensive according as new uses for it were found. But forestry at present afforded a wide field of industry, much timber being required in the construction of the railways. As regarded the mineral wealth, recent discoveries showed an amazing extent of coal existing in the country, whereas on the shores of the Pacific there was very little. The coal trade of Canada would evidently be enormously extended so soon as the railway was completed right across to the Pacific. The existence of large quantities of petroleum indicated that a large amount of coal was to be found in addition to the discoveries recently made. Unlike the coal in this country, the coal of Canada being near the surface, could be easily worked, and did not require the sinking of deep and expensive shafts. There was, therefore, room in Canada for an almost unlimited increase of population, while

the climate was certainly somewhat congenial to those who liked our own, and though subject to greater extremes of heat and cold than that of England, suited the Anglo-Saxon race. It was matter for rejoicing that in Canada emigrants would find free institutions, and the means of further development, in comparatively close proximity to this country, for the distance separating them from their own land would not be so great as if they went further south, to Australia. Though emigration was progressing at a considerable rate, as yet it was only in its infancy. It was painful to see, even in London, the numbers of strong and active men, or at least men who would be strong and active were it not for the insufficiency of their food, loafing about our wharves and docks, destitute of employment, while within very close reach was a land in which they might raise the food needed for their own support, and lead happy and virtuous lives. He was very sorry that the legislature was not alive to the responsibility which rested upon them. We were wasting our resources in poor houses and in the support of paupers, and still more largely by the expenditure of private charity, in supporting people in idleness and sickness, rather than putting them where they might labour for their support, and where they would be less liable to the influence of socialistic reformers, who taught false opinions in regard to the rights of property, and where they would be still less amenable to the seductions of those who would supply men with the liquor that destroyed their health and their morals too. The most attractive portion of Mr. Walford's paper was that which spoke of the balance of trade. The policy of the Canadian Government was opposed to that of the mother country, in so far as she was pursuing a protective one. He had no doubt at all as to the superior efficiency of free trade as compared with either fair trade or a restrictive policy. Time would show that to be the case; but he wished to reserve judgment as to the absolute applicability of a free trade policy to the circumstances of all our colonies until he had had further opportunities of judging. Ardent free traders though they might be, it must be admitted that there were circumstances, not many, which justified a departure from it. He should not wish beforehand to prejudge the question, and so to visit his friends in Canada in a hostile spirit, without hearing what was to be said in defence of the different policy of fair trade. Free trade must ultimately prevail all over the world. There was something so absurd in artificially enhancing the cost of any production in order to benefit one particular class of people, that it was impossible to conceive that the good sense of the world would recede from the free trade doctrines that had been promulgated. There was possibly one limitation to the immediate universal application of free trade, viz., that there were some manufacturers and some productive interests which required nursing in their commencement, though absolutely certain ultimately to stand alone. That fact was recognised in England, as shown in our patent laws. It was a question of the whole community entering into a kind of partnership to bear the cost of investigation and the expenses of starting a manufacture for a time, looking forward to the extended benefit when the monopoly should cease, and it became free and open to

all. That might be the case in Canada, although he rather thought not; and he was fully prepared to find that Canada was suffering from the protective policy which she had adopted. The advantages of protection, he believed, were illusory, though that was a matter to be decided by further experience. It was impossible to argue upon Mr. Walford's import and export figures, because the circumstances of Canada were very peculiar. At present she was employing a large amount of capital, not for the purposes of present production, but with the object of producing in the future. In London a large amount of money had been spent in the construction of the Thames embankment. That was not in any point of view a productive work, but having regard to health and cleanliness, it was money well spent, and England, as a rich country, could afford to do that. Canada was expending her money, not in something ornamental or immediately useful, but in laying down rails to carry the produce of her agricultural and mineral resources to the markets where they were required. That fact would entirely upset any arguments that might otherwise be drawn as to the balance of trade. In one part of Canada there were 9,000 men employed in making railways. These must either be supported on imported food, or by the consumption of food which the country would be able to export but for their presence. A large population existing in the country without producing anything for export must tend to increase imports and diminish exports. Therefore the same reasoning could not be applied to Canada in this respect that might be applied to our own country, and no solid argument was to be based upon the figures in the paper on that point. With regard to the exports of the United States, Mr. Walford seemed to be in error when he stated their value in money was $49,940,711 in 1882 and $37,620,399 in 1883. According to the tables issued by the Dominion Government to which he (Mr. Bourne) had had access, the figures appeared to be $47,940,711 in 1882, and $41,668,733 in 1883, a drop of only 6 million pounds instead of 12 million pounds. This made a serious difference in the balance of trade, or at least in the progressive increase or diminution of that balance. Mr. Bourne also pointed out, in regard to the 9,000 men employed, that they were in receipt of wages amounting to nearly $15,000,000 per annum, which money might have gone either to swell exports or diminish imports, if otherwise appropriated.

Mr. William Miller observed that Mr. Walford did not appear to have any idea that he should begin at the beginning with his statistics, viz., with that most essential point, the cost of Canada to the mother country. Canada had really cost Great Britain the whole national debt. Taking into consideration the wars with France and the United States on her account a hundred years ago, Canada cost this country about 200 million pounds sterling, and interest on such a sum for these past hundred years would represent the whole amount of our present national debt; so that if we had had nothing to do with Canada, there need have been no national debt upon this country. With regard to what had been

spoken of as the patriotic expenditure of Canada in making her railways, this simply meant that the politicians and speculators of that country were squandering the value of this magnificent landed possession, which was the common inheritance of the British people, by using it up for their own immediate benefit. Moreover, both English and Canadian statesmen were now endeavouring to promote a large emigration from this country to Canada as much as possible, at the expense of the people of England, but without any idea of drawing from Canada that proper return which we in this country should receive for the immense amount of blood and treasure spent in the acquisition, and the settlement and maintenance of that colony. Yet, notwithstanding the great concern which had been shown by our English statesmen in the affairs of Canada, and the appointment of such governors-general as the Marquis of Lorne, and other big wigs, the bulk of Englishmen knew absolutely nothing about Canada; the people of this country took but little interest in Canada, and Canadians took but little interest in the people of this country. In proof of this statement he might instance the fact, that there was not at present upon the Council of the London Chamber of Commerce a single individual in the remotest degree connected with Canada, and when he had said at a large meeting in the Chamber of Commerce that it was a farce under such circumstances to talk about this London Chamber of Commerce representing the commercial interests of the empire, everybody there seemed to look upon the observation as something perfectly out of the way and unnecessary.

Mr. E. Hepple Hall said it was impossible on the present occasion to do more than scant justice to Mr. Walford's full and discursive paper, the gist of which was he thought to be found in the following passage of his general introduction: "It does not require any great political sagacity to discover that the real problem which Canadian statesmen have before them for practical solution is a twofold one. Will the opening up of the Great North West induce a settlement of the territories, and an exchange of commodities, sufficiently rapid and sufficiently extended, to defray the annual charge upon the capital expended for the purpose? And will the population so settled be able and willing to consume the manufactured commodities of the Dominion in such a ratio as to prevent over-production, and the consequent financial and social disruption which follow upon such an event?" He hardly thought that Mr. Walford answered both these questions, and therein the paper was perhaps chargeable with being somewhat deficient. Certainly the answer to the first question was not sufficiently borne out, though he was prepared to rest contented with the picture which Mr. Walford had drawn as to the capabilities of Canada and the North West; for really the capacity of the country was such as to enable them to average the return at a higher standard even than he had done. When he first went there he certainly had an idea that where there were such fabulous reports as to the production of wheat ranging from 25 to 50 bushels per acre, a good deal of chaff must be mixed up with

the wheat. But he had now reason to know that it was a positive fact in the fertile belt, particularly that portion of it lying west of Winnipeg. As population poured into the country, and as the settlement of these prairie lands took place, there would be a constantly enlarging area of land under cultivation; the whole question therefore turned upon the cost of production—at what price could it be put down in Liverpool or in London? He understood from Mr. Beg, who was the financial head of the Canada Pacific Road, that for 28 cents per bushel the grain grown in the Red River or Old Selkirk settlement could be put down in Liverpool. If that were so, they could compete successfully with American growers. He knew very well what Manitoba, Iowa, Missouri, Illinois, Dacotah, and Ohio, could produce their wheat for, and that land was very much inferior to that of the whole range of the North West. The average growth of the North West Territory was from 18 to 20 bushels per acre, while the average in the United States was not more than 11 bushels, and in some instances as low as 9 bushels. That the growth of the North West would be greater in the future than it had been in the past, was a fact already settled by the very conditions under which we lived. When the Canadian Pacific Railway was completed to British Columbia, which might be expected to take place in 1885, we should see a development in Canada for which the history and experience of the past had scarcely prepared us. With regard to Newfoundland, it was the only colony under the British Crown to-day that occupied the peculiar and anomalous position of being entirely free of debt, and for that reason she was unfavourable to consolidation with the Dominion. With regard to the forests he agreed with Mr. Bourne that they were in process of depletion, and being gradually worked out; but in the prairie regions, where it was thought to be impossible that trees should grow, they had been planted successfully, and their culture had been encouraged in such a way by forestry and other laws, that the whole area of timber growing land to-day in Canada was not less than in the palmy days of Quebec. No doubt the approaching forestry exhibition about to be held in London would direct attention to this branch of labour, and forestry would be more successfully taken up than in the past. As to the subject of emigration, Canada had a grievance against all the world, inasmuch as the nature of her climate had never been properly understood. The Canadian climate was a most healthful one, and that was the great point for Englishmen to consider; and he knew of no country in the world where greater advantages, with greater robustness and ruggedness of situation were obtainable, than in Canada. The United States got a very large share of the emigration which should go to Canada, and was in reality despatched to Canada. He was prepared to challenge figures upon that point. There was a constant drift across the line into the United States, and that would continue so long as there was so large a portion of untilled land. But on the other hand there was a drift from the United States into Canada, and the tables were pretty evenly kept. He knew that several thousands of Americans had gone from

the contiguous territories of Minnesota, Dacotah, Kansas, and Nebraska, into Manitoba, and he would have been surprised if a considerable number of Manitobans had not drifted into those States. The tables were pretty evenly and squarely balanced, and the temper of the people from their constant intercourse was very well sustained. One or two matters had been lost sight of in the paper, as for instance the canals, upon which Mr. Walford, though he had mentioned them, did not dwell at any length; nor perhaps would it be thought necessary in a great country like Canada, which was connected by a system of railways and canals extending almost from one sea board to the other. Canals however supplied a very important means of transportation in this country. Much competition existed between the United States with their Erie canal, and the Canadian Government with their Welland and other canals; and no doubt when further facilities existed at Montreal, a very much larger proportion of the produce of the West would be sent by water, and voyage to Europe much more readily and much more cheaply through Canada in the future than it had done in the past. One word with regard to the postal department. His knowledge of the Canadian Post Office dated from rather an early period. When he first went to Canada the method of dealing with letters was rather primitive. They were deposited in a bag and hung on the bough of a tree, to be forwarded to their destination by the first man, generally a stray emigrant or trapper, who happened to pass. That remark applied only of course to the unsettled portions of the country, and especially to the north-west, that he loved so dearly, where the means of transportation were few and far between, and rough in character. The growth of the postal system had been very ably traced, and the sources from which Mr. Walford obtained his statistics placed them beyond all question. The figures which he had given however were generally for 1881 and 1882, whereas he might have obtained access to the figures for 1883, and in some cases 1884. The returns were made up in Ottawa in such a way that the High Commissioner ought to have had the figures for 1884, and certainly for 1883.

Mr. Walford observed that he had given the figures for 1883.

Mr. Hall said that with regard to thrift the testimony of all visitors to Canada was that the settlers were of first-rate character, and did not drift into the wild habits which were indulged in by the people of the United States. As settlers they were amongst the most thrifty colonists in the world. Canada was certainly entitled to have that much said. We had a greater Britain beyond the sea, and it should be our privilege to people it.

Mr. L. L. Cohen said he had no especial connection with Canada, and had therefore no special claim on the attention of the meeting; with reference however to the observations of a previous speaker, he could not but remark that it was as much to the purpose to talk about the cost of Canada to this country having

been 200 million pounds, as it would be to charge the cost of the Thames embankment on the few houses which abutted upon the Thames. Our struggle for that part of the world was but an incident of the wars with France, and the original cost of Canada should not be saddled with the general expenses of those wars, any more than with the expenses which attended incidents occurring through those wars in India, or in Egypt, or in Spain, or other places where the two nations came into contact. Another expression which had been made use of was, "that the land of Canada had been in some measure filched from the people of this country to whom it belonged." But what was it that the possession of land implied in these new countries; it was like the possession of wealth, and could not be considered without its attendant obligations, which implied a trust to be used for the purposes and for the benefit of the country in which it was situated. They could no more lock up a piece of land of that enormous size in that part of the world, and say that nobody but Englishmen should go upon it, and then expect this nation to derive a direct profit from it, than they could absolutely and permanently alienate any other possession. One of the consequences of the possession of land was that it must be worked in some degree for the benefit of those persons who happened to be in the country. We were only entitled to regard the land as being ours in the light of a trust to be developed through us and made beneficial for mankind at large. There was only one question in Mr. Walford's able paper to which he felt capable of addressing himself, namely, as to whether Canada was now going on at a rate which was too rapid, and whether the expenditure now being made was useful having regard to the progress of the State itself. Upon that point they might consider the example of other large States which had been improved by an expenditure which at the time of its being incurred seemed rather free. Take for instance the most backward country in the world, Russia: there there was a vast extent of territory and of uncultivated land, but the density of the population was far larger than that of Canada. The increment of revenue arising from the opening up of the country had been something enormous, and but for the political tendencies of the empire, improved credit and improved prosperity of the State must have resulted. Take the example of India. He was sorry to say he was old enough to remember when the Indian Government gave guarantees at 5 per cent. for the making of railways to the extent of 100 million pounds, and it was said at the time that the country was imprudently granting those guarantees; but the result was, that India was now borrowing at 3 per cent. instead of 5 per cent. The making of railways not over arid wastes, but extending as new districts became cultivated, was perhaps the wisest expenditure which a country could incur. The rate at which such an expenditure might be incurred could no doubt be measured and decided most usefully through the help of such papers as that of Mr. Walford, giving in detail the history and progress of the country. He did not think there was any cause for apprehension with regard to Canada at the present time, nor that there could be for many years to come, because although there were checks to the

progress of a country, such as we saw in the United States at the present time, such was the recuperative power of a new country, that any check was overtaken more quickly than we were accustomed to see in the older countries.

Mr. J. B. Martin said that he would first refer to the statistics of the fur trade, which he thought would be most interesting to the ladies, who had attended in such unprecedented numbers that evening. Mr. Walford stated that the value of the furs exported from Canada in 1881 was $987,000, and in 1883 $1,098,000, representing an increase of 11 per cent. It was remarkable that coincident with these figures the shares of the Hudson's Bay Company (which should strictly be called "The Company of Adventurers Trading with Hudson Bay") had declined from 32 to 24. If the value of the furs exported had been so much increased, how was it that the value of the shares of the company had so much decreased? He was afraid it was because the company was no longer a fur trading company, but a land speculating company, and the loss on land more than swallowed up the profit on the staple and original industry of Canada. At the same time, while this increase in the value of the furs had taken place, there had necessarily been a decrease in the area of the forests in which the animals supplying these furs found a living. The question of the forestry of Canada was one which he ventured to regard as of the utmost importance. To use Mr. Walford's own words: "It is estimated that there are fully 1 million square miles of timber lands remaining to be reduced." He (Mr. Martin) could not read that expression with entire approval. An area of 1 million square miles was inconceivable to those who lived in this small country. The area of the United States was about 4 million square miles, from which about 1 million square miles had to be deducted for the water surface of the great lakes and rivers. This vast area, equal to one-third of the United States, which (notwithstanding the great forest fires that caused ruin and disaster, and reduced townships and almost entire counties to ashes) still awaited the axe, seemed a quantity which could hardly be wasted; yet notes of warning as to the destruction of the Canadian forests had been already heard, and while remembering the direct consequences to the timber industry which might ensue, we had also to take most seriously into consideration, not only in Canada but in every region of the world, and especially in India, what would be the climatic effect of the destruction of the forests. The question was deserving of even more attention than Mr. Walford had given to it. With regard to the production of the soil, as Mr. Bourne had already reminded them, it was not very much more than half the average production of land in England. It would be interesting, he thought, to the Canadian emigrant to know the conditions under which he was likely to raise his agricultural produce, and how far he was likely to compete with an emigrant to the United States. He would pass over the question of petroleum, merely observing that he had seen it stated that petroleum had been a greater source of wealth to the United States than the gold discoveries. Still he ventured to think

it was not without its drawbacks, considering the amount of gambling which had had its origin in petroleum. As to the railways, Mr. Walford said that they paid but a small dividend; but that was not to be wondered at, seeing that 7,530 miles of line represented a capital expenditure of $415,611,810, which might be taken at 83 million pounds sterling, or equivalent to 11,000*l.* a mile. $20,000 or 4,000*l.* a mile was a very full mortgage charge on a first class railway in the United States. With regard to the figures dealing with the imports and exports, they were certainly most extraordinary, and required most careful consideration before they could be finally accepted. Under a protective tariff smuggling took place to a great extent across the frontier, and he took it that that system of smuggling, among other things, must be taken to give a great amount of uncertainty to the figures purporting to represent imports and exports from Canada to the United States and *vice versâ*. They must thank Mr. Walford for bringing before them this subject, which was a particularly interesting one, at a time when a great part of the science of England was about to commit itself to one frail ship in the hope of enlightening Canada with the radiance of British wisdom. That expedition had already caused at least two papers to be read in London on the subject of Canada, and the popularity of the subject had been shown by the attendance at those meetings. The object of the British Association should be not only to give learned lectures to the Canadians, but to see what sort of country Canada really is. He wished that Mr. Walford had given them some elements of comparison as between Canada and the United States, and he hoped that the result of the visit of the British Association to Canada would be to show that the pretensions which she had put forward were amply and abundantly justified.

Mr. R. Hamilton, referring to those plots of land in Canada where the yield was reported to be equal to the average obtained in England, said it would be interesting to learn under what conditions these results were obtained; many of the best class of emigrants, "hinds," and small farmers from the north of England and Scotland had taken farms in Canada. In many parts of the west large areas of land were very cheaply tilled, affording only a very small yield per acre to this rough mode of cultivation. Did those who obtain the larger yield per acre cultivate a comparatively small quantity of land on the higher system to which they were used in the old country? It would be a point of interest both statistically and otherwise to know whether the exceptionally large returns occasionally given were owing to the superiority of soil and climate, or to the adoption of a different style of culture by different farmers.

Mr. A. E. Bateman said he wished to correct the statement as to the wheat growth of Canada being so much higher than in the United States. The fact was that it was only 14 bushels, or about 2 bushels to the acre higher, and the true figures were not anything like those stated by Mr. Bourne. With regard to the tables

of revenue and the like, he would ask that they might be corrected before the paper was printed in their magazine, because it would not do for this Society to send out a statement to the effect that the revenue of Canada jumped from $4\frac{1}{2}$ million pounds sterling to $10\frac{1}{2}$ millions. With regard to the figures relating to the imports and exports, upon which some criticisms had been made, these figures of United States' trade he knew to be perfectly correct for all the years except the last, but it was difficult to account for the differences presented in 1883.

Mr. Walford, in reply, observed that one section of the speakers had to a large extent been answered by another section. With regard to the figures as to imports and exports which Mr. Bateman had declared to be perfectly correct, he had himself felt some difficulty in the first instance; they were taken from the Board of Trade Returns compiled by Mr. Patteson of Montreal, for the Board of Trade of that city. When he found that there were circumstances connected with them which he could not explain, he submitted them to the High Commissioner, and with his able assistance they were confirmed; he could do no more than give the figures which were confirmed in that way. With regard to the revenue returns of which Mr. Bateman had spoken, he took them from the official returns of the Canadian Government, which he thought the best source to go to; there were difficulties in regard to them which he could not himself overcome. He made several attempts to solve the difficulty, and now thought he saw his way to do so. Perhaps some day the civilised nations of the world might come to keep their accounts on a uniform system. It might seem a very simple thing to bring a number of statistics together, and say "these are the figures;" but a good deal of allowance must be made for the time and trouble and difficulties of going through them, and harmonising results and solving difficulties. The object in view was of course to afford means of comparison in regard to past and future growth. With regard to the cost of Canada to this country spoken of by Mr. Miller, he had taken the trouble to prepare a statement showing the incidents attaching to the different provinces of Canada, and how they had been acquired by this country; but his colleagues in this Society thought that that kind of historical retrospect was unnecessary. For his own part he thought that history was the proper accompaniment of statistics, without which they were frequently not understandable in their true sense. It was a very remarkable thing that so little was known about Canadian history by Englishmen generally. However, he had presented his paper with such statistics as were thought desirable, and they must be taken as they were given, certainly as being in the main absolutely correct; with regard to the question of the comparative productiveness of Canada and the different States, he had introduced no figures, because having travelled in nearly all the States of the Union, he had found that each claimed a greater amount of productiveness than the others, and consequently he did not know which to credit upon that point. Mr. Bateman probably gave the true figures

when he assessed the average production of wheat at 12 bushels per acre in the United States, and 14 bushels per acre for Canada. There were of course some parts of each country which produced very much more than that; but if he had gone into the controversy upon that question, the paper would not have got finished that night. In preparing a paper of this sort one had to consider time and place, and circumstance. Those who thought his statistics might be supplemented, would have every opportunity afforded them on some other occasion. He had taken all the trouble he could to correct the figures here furnished, gathered from many sources, and he was confident they would turn out to be substantially true when properly tested. He wished to thank his friend Mr. Lionel Cohen for the facts he had given, which were of great interest and considerable value. For his own part he was very well satisfied with the discussion which had taken place, and he hoped that when it was boiled down and printed with the paper, it would be found that the Society had some information in regard to Canada which it did not before possess. There were several other gentlemen present who could throw light on the subject if time had permitted; and he himself regretted the fact that Sir Charles Tupper and Mr. Colmer, were each absent from England.

MISCELLANEA.

CONTENTS :

	PAGE
I.—The Fall in the Price of Commodities; its Cause and Effect	348
II.—Lloyd's Statistics of Marine Casualties for the Year 1883	360
III.—Emigration and Immigration for the Year 1883	368
IV.—The Annual Local Taxation Returns (England) of the Year 1881-82	374
V.—Quarterly List of Additions to the Library	380

I.—*The Fall in the Price of Commodities; its Cause and Effect.* By Paul Leroy-Beaulieu. (*Translated from the Economiste Français, 12th and 19th April*, 1884.)

The question of the fall in the price of commodities, and the alleged increased value of gold, has for some time past attracted a considerable amount of public attention, not only in France and England, but in other European countries; and it may perhaps be remembered that two articles appeared in the columns of the *Economiste Français* of April, 1883, dealing with this particular subject. We are now induced to revert to it, and devote some further consideration to the question on account of the fresh light which has recently been thrown upon it by many well known writers, a variety of new facts bearing upon the question having lately been put forward, and fresh theories ventilated to account for the phenomenon.

It may be within the memory of our readers that at the Palais Bourbon, during the sittings of the Commission appointed to inquire into the condition of the working classes, and the cost of living, a number of workmen who gave evidence, based their claims to higher wages on the fact that a considerable augmentation in prices of articles of consumption had recently taken place, and that the cost of living generally had increased. Their contention, however, does not appear by any means to be borne out by facts; on the contrary, there is a consensus of opinion on the part of statisticians and economists who have gone deeply into the question, that instead of commodities having risen in price, there has been during the last ten years a perceptible diminution in the cost of nearly all articles of consumption. This was clearly shown to be the case last year by the English statesman and financier Mr. Göschen, who dealt exhaustively with the subject, and showed that prices instead of increasing had, on the contrary, materially diminished. The English *Economist* confirmed his views, and basing the calculations on an aggregate of the prices of twenty-two of the chief articles of consumption, clearly demonstrated that prices had fallen 20 per cent. below those during the period 1857–74, and were back to the level or nearly the level of 1845–50.

Again, the eminent statistician Mr. Giffen in his valuable work the *Progress of the Working Classes*,—a work which has attracted considerable attention in France, and which has recently been translated and published in the *Bulletin de Statistique* for March last, bears testimony to the fact that there has been a sensible diminution in the aggregate of prices. A well known Belgian statistician, M. Emile de Lavaleye, in a letter to the *Indepéndance Belge* of the 1st April last, on the subject of this fall in prices, pretends to have discovered the cause, in the suspension of gold coinage, and of coinage generally in Western Europe during the last four years, in England and in France during the last twelve months.

And finally we have the confirmation of M. Soetbeer, a statistician distinguished alike for his accuracy and his strict attention to details.

It is evident then, that there can be no doubt of the actual existence of this diminution of prices, and on this point one can hardly understand that there should be any diversity of opinion, we ourselves have found during the last two years that prices have become, if not universally, yet generally lower, and the decline moreover has been for the most part of a permanent and durable character, and not merely a temporary fluctuation which will be corrected by an immediate rebound; it is even more than probable that as regards a vast number of articles this decline will eventually become more accentuated, and we must express our firm conviction that the period is not far remote when the prices of the greater part of the necessaries of life will be within the reach of all at a considerably reduced rate.

To account for this decline there are many circumstances which must be taken into consideration, but the causes which have been chiefly instrumental in producing it may be summed up as follows: the opening up and development of new countries, or the regeneration of old ones which had fallen into barbarism, and had been reclaimed and brought under the influence of civilisation; the increased facilities in the means of transport, and the state of perfection to which they have been brought, and the continual reductions which are being made in tariffs and tolls on railways and canals; the constant augmentation of capital and increase of industrial competition, both of which are instrumental in causing the rate of interest to be lowered, and in forcing the trading community to be content with very moderate profits, this phenomenon being more particularly noticeable in those countries which had been somewhat backward in the march of civilization. We directed particular attention to this phenomenon in a work published some time ago entitled *Essai sur la répartition des richesses*, a second edition of which has recently been published by Guillaumin, and we then pointed out how materially the rate of interest and trade profits generally were affected by the influence of civilization. After the panic on the French Bourse which occurred in 1882, we were accused of having greatly exaggerated the tendency to a decline in the rate of interest. On this point however our critics were mistaken, as we maintain that this

decline continues, and has not been confined to one particular country, but has been almost universal. The fourth and last cause which has contributed to bring about the fall in prices, and by no means the least important, consists in the rapid strides which are continually being made in the advancement of industrial arts, and the state of perfection to which they have been brought.

To these four active causes which may be considered as permanent, in so far that their influence will be felt for at least the next quarter of a century, we may add another, a transient one, the glut of production which at present exists in many parts of the civilised world. This is a crisis which will eventually pass away, leaving, however, the decline in prices to survive it.

As to the theory suggested by M. de Lavaleye that the cause of the decline is to be sought for in the scarcity of gold, the depreciation of silver, and the suspension of coinage in many countries, we unhesitatingly decline to accept it. It does not appear to us to have affected it in the slightest degree; the decline must be distinctly traced to the four causes which we have enumerated above, each of which is an active one, and sufficient in itself to exercise a material influence upon it. If there is a fall in the price of wheat, why should it be attributed to the scarcity of gold, when it is evident that the simple explanation lies in the increased production in America, India, Australia, and Chili, and lower rates of freights? And is not the enormous increase in the sugar production of Germany, Austria, and France, a sufficient reason for its cheapness? And the same may be urged in the case of coffee, petroleum, cotton, and wool. As regards iron or steel it is evident that the decline in the prices of these articles must be materially affected by the demand, the condition of the iron works and the trade generally. Those articles on the other hand which are not susceptible of rapid extension, increased economy in their production or manufacture, or in the sale of which there is no very keen competition, have not fallen in price. House rent has not up to the present been lower, and if rents are now beginning to fall, it is due in a great measure to over building speculations, of which there is at the present day abundant evidence in very many neighbourhoods. Again, there is no perceptible diminution in the cost of amusements, payments at exhibitions, theatres, and entertainments, or in the wages of servants, salaries of clerks, officials and other employés, or in fees generally. Thus it is obvious that the dearth of gold has absolutely nothing to do with the fall in the price of a vast number of commodities.

As a matter of fact, one is even justified in asking if this scarcity of gold is not purely imaginary. We cannot lose sight of the fact that there is an annual production of this precious metal to the extent of 500 million francs, and at the present day gold has so many substitutes, such as bank notes, cheques, and bills, all of which are largely employed by merchants and the trading community generally. We should be more disposed to accept the theory of our distinguished fellow member of the Institute, M. Victor Bonnet, in the last number of the *Revue des deux Mondes*,

who sees in the excessive note circulation, especially in France, a cause of the abnormal development of speculation and inflation of prices.

Putting on one side this purely imaginary cause of the fall in prices, the increased value of gold, we will confine ourselves to the consideration of the four causes which we have given above, which may clearly be taken as co-operating to produce it.

The fact exists that prices are lower, and the conditions of life are materially improved, although a popular belief exists to the contrary, at least in France, if not in other countries. This may in some measure be accounted for by the fact, that impressions formed in the minds of some persons last considerably longer than the causes which produced them. For instance, the steady rise which took place in prices during the period comprised between 1840 and 1875 created such a lasting impression on the public mind, that it will require a considerable time to elapse before it can be effaced, and for people to realise that the period of inflation has ceased and a new era commenced. Again, there is something wanting in our commercial organisation, and this remark is particularly applicable to the provision trade, especially in the larger and more important centres, the consumer in very many cases being far from enjoying the benefits which he ought to derive from the cheaper rate at which the articles themselves are produced. And in the third place, one of the results of increased prosperity has been increased requirements, a complete revolution having as it were been effected in the everyday life of all classes of the community; their wants have increased with their wealth, and their requirements, which previously they had little difficulty in satisfying, have now become much more varied and costly. The observation so frequently made that everything is dearer at the present day, and that it costs more to live, must really mean that a totally different style of living has been adopted. Although prices have certainly fallen, it must not be understood that the cost of everything is less; but it is undoubtedly the case as regards the majority of the more essential commodities, such as wheat, wool, wine, coal, and carriage of merchandise. On the other hand, luxuries pure and simple, such for instance as amusements of all kinds, presents, servants' wages, &c., are none of them affected by the decline, but, on the contrary, at the present time they would seem, if anything, to necessitate a greater outlay than formerly.

We may here take the opportunity of calling attention to the fact that France does not derive the same advantages from the fall in prices as are enjoyed in many other countries; there are two reasons which militate against it, one being the excessive taxation to which a vast number of articles are subjected, and another the customs prohibitions, which are enforced against the importation of many articles of consumption. Let us take for example two essential articles, coffee and bacon, and in these it is evident that the French consumer does not gain much by their cheapness, seeing that a customs duty of 1 fr. 50 cents. per kilogramme is imposed upon the importation of the former, while the introduction into the country of the latter coming from America is pro-

hibited. Notwithstanding this, the decline in prices is self evident, and the common saying that nowadays the cost of living is greater has ceased to have any foundation in fact. Indeed, it has become quite contrary to the fact in England, where but few taxes are imposed, where there is a perfectly unfettered and well developed international trade, and a complete internal commercial organisation.

Mr. Giffen in his essay, *The Progress of the Working Classes*, clearly demonstrates the decline which has taken place in prices generally, and we cannot fail to be impressed with the considerable fall in wheat. In comparing prices at the present period with those of half-a-century ago we notice two striking peculiarities—on the one hand, the very high prices once reached are now no longer touched, and, on the other hand, the average price is much lower than formerly. Forty or fifty years ago the variations in the price of wheat were strongly marked. In 1836, according to Mr. Giffen, wheat was quoted in England at 36*s.* a quarter, equivalent to 16 frs. the hectolitre, and this was the minimum price; but in 1838-41 we find it touching 35 frs. 50, 36 frs., 50 frs., and 35 frs. the hectolitre. In 1847 the price rose to 102*s.* 5*d.* the quarter, equivalent to 42 frs. the hectolitre; and these figures which we have quoted are not, it must be remembered, merely the extremes touched, but the actual averages for the whole year. During the last twenty years, however, a totally different state of things has prevailed, the highest average price of wheat being 64*s.* 5*d.* the quarter, or 28 frs. 50 the hectolitre in 1867, and 63*s.* 9*d.* the quarter, or 28 frs. 20 the hectolitre in 1868; while the highest average for the last ten years alone is 58*s.* 8*d.*, or 26 frs. 20 in 1873, which is only about 10*s.* above the average for the whole period. We may take it that at the present time the normal price of wheat is from 18 to 20 frs. the hectolitre, and it is within the range of probability that in a few years exception may even be taken to this as being too high an average. As one of our contemporaries recently pointed out, wheat in certain districts of India is only worth about 3 frs. the hectolitre. Looking at the rapid extension of the railway system in France, and the lowering of the Suez canal tariff, it appears probable that in four or five years the price of this article will not exceed 13 or 14 frs., and may perhaps fall considerably below this figure.

In an article which appeared last year in these columns, written by M. Armengaud, who has devoted considerable attention to matters affecting the wheat and flour trade, it was stated that though there is a decided tendency to a decline in the price of wheat and flour, the consumer had not hitherto derived very much benefit from it. In France particularly, the gain has been infinitesimal. From the present time, however, a boon will be conferred on the consumer in the shape of a very much cheaper loaf, as the price now in Paris instead of being 40 centimes the kilogramme, hitherto the fixed and unvarying price, has fallen to 30 centimes—a perceptible difference. And it may reasonably be assumed that if the bright prospects now held out in India be only realised, the time is not far distant when the price of bread in Paris will be as low as 25 centimes the kilogramme.

It must be observed that bread is by no means the only article in which there has been a fall in prices, as Mr. Giffen enumerates a variety of other important articles in which on the whole a decline has taken place: chief among them being sugar, the fall in this article being particularly marked. During the year 1840 it averaged in England 68*s.* 8*d.* the hundredweight, that is about 86 frs., or 78 centimes the pound; at the present time it may be bought at the rate of 21*s.* 9*d.* or 27 frs. 40 centimes, or 25 centimes the pound, a fall of about two-thirds in the price. Taking another article, cotton cloth exported, we find that the cost in 1840 was $5\frac{3}{8}d.$ the yard, about 55 centimes the metre, whereas it is now only $3\frac{1}{4}d.$, or 33 centimes the metre—a fall of two-fifths. And even though it may be contended that there is a slight inferiority in the quality of the articles themselves, it must be admitted that the consumer is in a much better position now than he was forty years ago. Coal has considerably fallen in price, but as regards meat in England, the country *par excellence* of free trade, there has certainly been an upward tendency in prices. The prices of bacon and pork, articles which enter largely into the consumption of the lower classes in England, are now on a par with those of 1840. We have it on the authority of Mr. Giffen, that the price of large hogs was in 1840 established at the rate of 4*s.* $3\frac{1}{2}d.$ per stone of 8 pounds, or about 67 centimes the pound, whereas in 1882 it was 4*s.* 6*d.* or 70 centimes the pound, a rise of about 6 per cent. in forty years. Butchers' meat has certainly risen, for we see that the price of inferior beasts rose from 3*s.* 1*d.* per 8 pounds in 1840 to 4*s.* $3\frac{3}{4}d.$ in 1882, a rise of about 35 per cent. The price of second class beasts increased from 3*s.* 6*d.* in 1840 to 4*s.* $9\frac{3}{4}d.$ in 1882, a rise of from 37 to 38 per cent Mutton has even still further increased in price, inferior sheep now being sold at the rate of 5*s.* 7*d.*, as compared with 3*s.* 5*d.* in 1840, an increase of about 68 per cent. And the proportional increase is about the same in the case of second class sheep, which rose from 3*s.* $10\frac{1}{4}d.$ to 6*s.* $1\frac{1}{4}d.$

Notwithstanding this, if we take an aggregate of the items of expenditure for articles forming a workman's diet, we can arrive at no other conclusion than that the cost of living has not increased during the last forty years in England. We will for the moment put on one side the question of house rent, a subject to which we will return later, and devote some attention.

As affording an excellent example of the fall which has taken place during the last half century, we reproduce *in extenso* the following passage from Mr. Giffen's work:—

"With regard to this question of prices, I have been favoured with the copy of a letter, dated 11th June, 1881, addressed by Mr. Charles Hawkins, of 27, Savile Row, to the editor of the *Daily News*, on the cost *per patient* of the expenditure of St. George's Hospital in 1830 and 1880. The facts stated confirm in an interesting way what is here said as to the cost of articles of the workman's consumption fifty years ago and at the present time. Mr. Hawkins, who was at one time one of the treasurers of the hospital, and therefore speaks with authority, gives the following table and notes:—

"'Although each patient costs now 1*s.* 1*d.* less than in 1830, there have been great alterations in the different items of expenditure, viz. :—

	Cost per Patient.			
	1830.		1880.	
	s.	*d.*	*s.*	*d.*
Meat	18	4	22	2
Bread and flour	10	7	4	1
Wine and spirits	—	10	3	3
Malt liquor	5	5	2	6
Milk	6	2	5	11
Tea and grocery	3	10	3	5
Drugs	16	5	7	11
Coals and wood	10	6	3	10
Laundry	2	10	4	10
Instruments and surgical appliances	1	9	5	2
Staff, offices, servants, nurses	20	3	34	3

"Had wheat cost in 1880 what it did in 1830, 1,884*l.* must have been spent in bread and flour instead of 738*l.* The cost of port wine in 1830 was 72*l.* per pipe; in 1880 45*l.* In 1830 many of the patients provided themselves with tea and sugar. Under the head 'Drugs' is included the cost of leeches; in 1846 14,800 leeches were used at a cost of 143*l.*; in 1880 only 425, costing 1*l.* 16*s.* In 1843 another hospital, treating double the number of patients, used 48,900 leeches, but in 1880 only 250.

"These items show the great advantage of the reduction of price in some articles of diet, and the great extra expenditure now necessary for the treatment of hospital patients, depending on the greater call for additional 'staff,' more especially for nursing, and an altered mode of treatment of accidents and operations, as also the greater amount of stimulants now exhibited, &c."

But to return to France. With bread at 30 centimes the kilogramme, as it is now beginning to be sold; with a probable decline in the price of wine, which in the course of a few years will become considerably more marked when the ravages of the phylloxera have been effectually checked, and the production of Algeria and Tunis developed, it is evident that the cost of living will be less than it has ever been during the last half century. There remain to be considered now the question of house rent and one or two other elements of expenditure, to which we will next devote our attention.

We have already pointed out that owing to a want of the elasticity in our commercial system, especially as regards the provision trade, and also to excessive taxation, France has not benefited to the same extent from the decline in prices as her more favoured neighbour England. The removal of these causes, however, must be merely a question of time, and to a great extent will depend upon the spread of enlightenment. It is only by a more rigid system of economy in public expenditure, and a reduction of taxa-

tion, that the Government are enabled, in a country of advanced civilisation, to assist in furthering social progress.

To render our meaning clearer, take the case of the cost of transport. The excessive tax of 25 per cent. levied on goods despatched by *grande vitesse*, almost entirely precludes the possibility of deriving any benefit from a fall in prices; and the same remark would apply to a variety of miscellaneous articles. We cannot but think that public attention has not been sufficiently directed to the heavy burdens imposed upon the working classes by an extravagant parliament, which have the effect not only of trammelling their labours, but of retarding their progress.

We have shown that as regards the prices of many of the principal articles of consumption there has been a steady decline. An exception must, however, be made in the case of wine, which during the last few years has considerably increased in value. It is, however, well within the range of probability that the next seven or eight years will see a very great difference, and prices will probably rule lower than they have ever been. It would certainly be curious to find the phylloxera, originally the cause of the present high prices, become the means of effecting a considerable fall in the value of this commodity. A glance at the report of M. Tisserand, Director of the Ministry of Agriculture, will be sufficient to convince even the most sceptical that the effectual checking of the ravages of the phylloxera will become merely a question of time. Submersion on the one hand, which however can only be resorted to under exceptional circumstances, the treatment by sulphur of carbon, and the propagation of the American vine, will, it is expected, in the course of the next ten or twelve years restore to the French vines all their old strength and vigour. We see from M. Tisserand's report that up to the 1st October, 1883, 17,792 hectares under vine cultivation have been subjected to submersion, 23,226 were treated by sulphur of carbon, 3,097 by sulphocarbonates, and 28,012 replanted with American cuttings. This last experiment has been attended with eminently satisfactory results, and vineyard proprietors are very sanguine that it will ultimately become a complete success; moreover we may reasonably look forward to the time when our wine harvest will surpass that of the famous year 1875, when it amounted to 83 millions of hectolitres, or at least equal to that of 1874, when the yield was somewhat in excess of 63 millions of hectolitres. It is even far from improbable that in ten or twelve years there will be a greater yield of wine than has ever been known, for when the old vines have been thoroughly re-established, there will still remain the new ground which capitalists, tempted by the prevalent high prices, have been induced to turn into vineyards. During the last five years a vast extent of land, some of which had been hitherto under wheat cultivation, has been transformed into vineyards in many districts of the Department of the Aude and the basin of the Garonne.

We shall not be accused of taking an optimist view of the situation, when we record our conviction that not only will the next few years see a considerable addition made to the 2,058,000

hectares which were returned in 1880 as under vine cultivation, but that the extent of land under vine cultivation in 1874, viz., 2,465,000, will be surpassed.

According to M. Tisserand, the extent of land under vines before the advent of the phylloxera amounted to 2,465,310 hectares, and the vines destroyed by the phylloxera covered an area of 859,302 hectares. As at the present time there are 2,058,000 hectares under vine cultivation, it is evident that 400,000 hectares hitherto under various crops have been devoted to this cultivation.

When we consider that not only have the high prices caused by the ravages of the phylloxera had the effect of stimulating farmers in Italy and Spain to devote increased attention to the cultivation of the grape, with the result that the number and extent of vineyards have greatly increased in these countries, but that capitalists and farmers both in Algeria and Tunis have turned their attention also to this industry, it seems to be far from improbable that in a short time a fall will take place in the price of wine quite as remarkable as that which characterised another important article of consumption, namely, wheat. Writing on the subject of the wine harvests of Algeria, some of the French journals recently estimated that in three years' time the extent of land in that country under vine cultivation would exceed 300,000 hectares. This, in our opinion, is greatly over estimated. We are, however, disposed to think that in the course of the next six or seven years in Algeria and Tunis together there will be 150,000 hectares under vines, producing between 7 or 8 million hectolitres of wine, the greater part intended for exportation. And even assuming that the ravages of the phylloxera extend to the vines of Italy, Spain, and Africa, the excellent results that we have predicted will at most be only modified or in a slight degree retarded.

The experiences already gained in France during the struggle with the phylloxera will be eminently useful in assisting other countries to successfully cope with the difficulty. Taking all things into consideration, we may reasonably hope that the day is not far distant when ordinary wine can be again bought at 10 francs the hectolitre or 10 centimes the litre, in the wine producing districts. With a good retail trade organisation, reduced rates of transport, and a reduction of taxation, the Parisian workman would soon be in a position to procure wine at about 40 centimes the litre. This being the case, and bread at 30 centimes the kilogramme, a material improvement will have been effected in the conditions of life of the working classes.

In spite of many assertions which have been made to the contrary, the inference as to the more diffused wellbeing of the Parisian population is fully borne out by statistics, for we find in the *Annuaire de l'Economie politique et de la Statistique* for 1883 the following interesting statement, showing the consumption per head of population in Paris of the following articles in each of the years 1866, 1872, 1876, and 1881:—

Consumption per Head of Population.

	1866.	1872.	1876.	1881.
Wine ..... gals.	42	49	48	50
Bread ..... lbs.	—	—	—	348
Meat ..... ,,	165	155	168	172
Poultry and game ..... ,,	24	24	23	24
Fish ..... ,,	19	30	28	28
Butter ..... ,,	18	17	16	17
Eggs ..... No.	159	157	150	180
Cheese ..... lbs.	5	5	5	5

From the above it will be perceived that with the exception of butter, the consumption of which appears to have slightly declined, and of poultry and game, which remains almost stationary, there has been a wonderful increase in the consumption of the whole population per head. As the working classes in 1881 composed the greater part of the Parisian population, it is evident that they have enjoyed a fair share of the increase of material wealth. It may be taken that the consumption of the rich remains almost stationary, therefore the increased average consumption has been on the part of the masses.

It will be unnecessary to devote much attention to the question of the rise or fall in the price of clothing and furniture, though there can be no doubt that both these articles are cheaper than formerly; there remains however one question to be considered, forming as it does an important item in the expenditure not only of the working classes but of all sections of the community: we refer to house rent, which during the last four and twenty years has steadily gone up. When increased cost of living is spoken of nowadays, it must be more particularly house rent which is referred to.

Mr. Giffen, in his able paper on the progress of the working classes, gives it as his opinion that there is an increase in house rents during the last fifty years to the extent of 130 per cent.; but he goes on to say, "houses are undoubtedly of better value all round than they were fifty years ago. More rent is paid because more capital is in the houses, and they are better houses. So as there is reason to believe that the houses are better, we may take it that the increased rent is merely a higher price demanded for a superior article."

During the parliamentary inquiry which is now being held by the *Commission des Quarante Quatre*, the question of house rent has been frequently under consideration, and it has been stated on good authority that certainly as regards Paris, houses at low rentals have been constructed on a much larger scale than has been generally imagined, and there has been no such enormous increase in rents during the last quarter of a century as some assert. On this point, one of the most eminent authorities on the subject, M. Robinot, director of the "Sous Comptoir des Entrepreneurs," the establishment which has taken a very active part in the chief building operations of recent years, states as follows: "The most important building operation in which I have been engaged has been to construct twenty-four houses at the back of the Buttes Montmartre. Formerly, in this neighbourhood

there was a dense population living in houses badly built, and defective both as regards ventilation and sanitary arrangements. This condition of things has been entirely changed—tenements clean and airy have been erected, and the strictest attention has been paid to sanitary arrangements." In a later portion of his evidence he goes on to say, "I have in my possession one of the schedules which are supplied to us each week from the Prefecture de la Seine, in which is shown all the building authorisations which have been granted. From this document I find that in the week just ended, thirty-three building permits have been applied for and issued. They refer to the ten different quarters of Paris; and those in which building operations are most extensively carried on are in the densely populated districts of the 14th, 15th, 17th, and 19th arrondissements."

An impression has been formed in the minds of some persons that builders have ceased to erect houses at low rentals in Paris; this is a totally erroneous impression, and is far from being founded on facts, as taking one instance alone, the houses lately erected on the Buttes Montmartre. Here suites of apartments are to be lent ranging in price from 300 to 500 frs. per annum. Here again we must quote Mr. Robinot: "In the Rue des Poissonniers and the Rue Doudeauville it may be said that a little town has lately sprung up, capable of housing eight to ten thousand people, and there is no doubt that in a short time tenants will be found to occupy it. Similar buildings have been erected in the south of Paris, particularly in the Gobelins quarter, which is very densely populated. At the present moment I am preparing an estimate for the construction of twelve or fifteen houses in the neighbourhood of the eastern and northern stations. . . . . According to the latest schedules issued from the Préfecture de la Seine, permission has been granted for the construction of seven houses in the Grenelle quarter, six in Belleville, four in the south of Paris, and it is a remarkable fact that only one authorisation has been asked for for the construction of dwelling houses in the fashionable district of Paris, the Quartier de Passy."

It is abundantly clear that during the last three or four years the builder has been as much occupied in erecting houses for the masses as for the rich. On this point we cannot do better than quote the evidence of M. Grosclaude, President of the "Chambre des Entrepreneurs de Demolitions;" he says: "I believe that at the present day there are many dwellings vacant, at rentals varying between 100 and 500 frs., and there is therefore no necessity to embark in fresh building speculations. This is particularly the case in the Quartier Montmartre and in the 15th Arrondissement, where a vast number of dwellings, lately occupied by workmen and their families, are at present unoccupied. Again, in the 12th Arrondissement there are, to my certain knowledge, 18 houses unlet, all well-built, in a healthy situation, well lighted and ventilated, with venetian blinds back and front, and with water laid on, and gas in most of the rooms. In these 18 houses there are 382 different apartments, and of this number there are at present 26 unoccupied."

It may not be uninteresting to look into the rents of these 382

apartments. We find that 56 are let at prices ranging between 100 and 150 frs.; 15 from 151 to 200; 20 from 201 to 250; 33 from 251 to 300. Thus it will be seen that the rents of these 124 apartments, which form about a third of the whole number in these newly-constructed houses, in no case exceed 300 frs. Twenty other apartments range between 300 and 350 frs.; 78 from 351 to 400; 33 from 401 to 450; 46 from 451 to 500; 20 from 501 to 550; 10 from 551 to 600; 19 from 601 to 700; and 32 are let at a rental exceeding 700 frs. Such is the composition of these 18 new houses. Of the 26 vacant apartments there is only one which is not included in the category of those ranging between 251 and 300 frs., the rentals for the most part varying between 350 and 500 frs.

M. Grosclaude is of opinion that the rise in house rents has been by no means in proportion to the rise which of recent years has taken place in wages. It is an incontrovertible fact that during the last twenty years wages have risen in some trades as much as from one to three francs a day, thus representing an increase of 300 to 1,000 frs. per annum. On this point M. Grosclaude says: "The increase of rents has in no case exceeded from 20 to 100 frs. per family, that is to say, a room which previously let at 100 frs. now fetches 120; and one of 300, 350 frs., perhaps 400 frs. Thus it will be seen that a workman and his family have in no case to bear a greater rise in the rent of his house or apartments than 100 frs., and as we find that he makes from 300 to 1,000 frs. per annum more than he used, it is not on the score of house rent that he can complain of the increased cost of living. Here again is evidence that there is a wonderful improvement in the workman's condition."

"So we find that on all points these eminent authorities MM. Robinot and Grosclaude agree, and it must be admitted that if only on account of their long and varied experience, they are men well qualified to express an opinion on the subject of houses and house rent. They have shown that a vast number of workmen's cheap houses have lately been erected, and it is quite within the range of probability that in course of time the rents of these tenements will be reduced; if not, there is no gainsaying the fact that the houses themselves are undoubtedly of better value than they were fifty years ago, and afford far more conveniences and comfort. In estimating the money wages of an average Parisian workman and his family, we should be below rather than above the mark if we stated them to be between 2,000 and 3,000 frs. per annum, and as house rent amounts to only 300, 350, or at most 400 frs. a-year, representing a seventh or eighth part of his income, it is evident that the increased price in the case of house rent is not sufficient to neutralise the general advantages which the workman has gained. Notwithstanding the fact of the slight increase in the prices of these articles, meat and house rent, from a careful examination of everything in connection with the subject of prices and wages, we must unhesitatingly express our conviction that the conditions of life of the working classes are enormously improved.

II.—1. *A Table showing the Number of Wrecks and Casualties to Sailing Vessels and Annual Total Compared with the Average Number*

Sailing Vessels.	First Half-Year.		Second Half-Year.		Annual Total.			
	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.		Average 17 previous Years.	
					Number.	Per Cent.	Number.	Per Cent.
1. *Missing*	70	58	38	28	108	1·14	86	0·81
2. *Abandoned*—								
Recovered	41	31	35	43	76	0·80	73	0·69
Lost	88	114	80	130	168	1·77	244	2·31
Total	129	145	115	173	244	2·57	318	3·0
3. *Collision*—								
Not damaged	195	228	264	290	459	4·84	518	4·89
Damaged	475	550	602	645	1,077	11·34	1,195	11·29
Sunk	67	75	97	84	164	1·73	159	1·51
Total	737	853	963	1,019	1,700	17·91	1,872	17·69
4. Sinking from causes other than collision	135	147	150	174	285	3·0	320	3·03
5. *Stranded*—								
Got off	650	695	744	769	1,394	14·68	1,464	13·83
Not got off	443	459	519	618	962	10·14	1,077	10·18
Subsequent fate not reported	70	106	107	159	177	1·86	265	2·5
Total	1,163	1,260	1,370	1,546	2,533	26·68	2,807	26·51
6. Capture	—	3	—	6	—	—	9	0·09
7. Piracy	—	1	—	1	—	—	3	0·03
8. Burnt or on fire	51	64	69	73	120	1·26	137	1·3
9. Dismasted or disabled	160	189	195	269	355	3·74	458	4·32
10. Jettison of cargo under deck	71	94	64	89	135	1·42	183	1·73
11. Jettison of deckload	81	57	130	130	211	2·22	187	1·77
12. Leaky	460	497	507	627	967	10·19	1,124	10·64
13. Loss of anchors or chains	175	221	232	267	407	4·29	488	4·56
14. Machinery damaged, &c.	—	—	—	—	—	—	—	—
15. Mutiny, sickness, &c.	41	110	52	107	93	0·98	217	2·05
16. Ship damaged, &c.	1,073	1,092	1,239	1,257	2,312	24·36	2,349	22·19
17. Water-logged	10	9	13	18	23	0·24	27	0·26
Number of casualties	4,356	4,800	5,137	5,786	9,493	—	10,586	—
,, vessels	4,088	4,480	4,872	5,420	8,960	—	9,898	—

Steamers reported in "Lloyd's List," during the Year 1883, *and the Percentages of the and Percentages for the Seventeen Previous Years.*

First Half-Year.		Second Half-Year.		Annual Total.				Steamers.
1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.		Average 17 previous Years.		
				Number.	Per Cent.	Number.	Per Cent.	
20	7	7	3	27	0·62	10	0·44	1. *Missing*
								2. *Abandoned*—
1	1	—	—	1	0·02	1	0·04	Recovered
4	2	1	2	5	0·12	4	0·18	Lost
5	3	1	2	6	0·14	5	0·22	Total
								3. *Collision*—
234	159	332	205	566	12·99	364	15·71	Not damaged
268	133	324	167	592	13·59	300	12·95	Damaged
33	13	32	17	65	1·29	30	1·30	Sunk
535	305	688	389	1,223	28·07	695	29·96	Total
35	22	46	29	81	1·86	51	2·20	4. Sinking from causes other than collision
								5. *Stranded*—
415	229	514	257	929	21·33	486	20·97	Got off
71	36	82	50	153	3·51	87	3·74	Not got off
5	10	15	10	20	0·46	19	0·84	Subsequent fate not reported
491	275	611	317	1,102	25·30	592	25·55	Total
—	—	—	1	—	—	1	0·04	6. Capture
—	—	—	—	—	—	—	—	7. Piracy
63	26	79	31	142	3·26	58	2·48	8. Burnt or on fire
21	8	12	11	33	0·76	19	0·82	9. Dismasted or disabled
50	23	25	21	75	1·72	44	1·89	10. Jettison of cargo under deck
11	9	31	15	42	0·96	24	1·03	11. Jettison of deckload
50	27	48	26	98	2·25	54	2·31	12. Leaky
26	12	16	13	42	0·96	26	1·11	13. Loss of anchors or chains
359	201	421	224	780	17·90	425	18·33	14. Machinery damaged, &c.
3	9	4	10	7	0·16	19	0·83	15. Mutiny, sickness, &c.
392	144	306	152	698	16·04	296	12·78	16. Ship damaged, &c.
—	—	—	—	—	—	—	—	17. Water-logged
2,061	1,073	2,295	1,245	4,356	—	2,319	—	Number of casualties
2,022	1,033	2,274	1,213	4,296	—	2,245	—	„ steamers

2.—*A Table showing the Results of Wrecks and Casualties to Ship and to Cargo, with List," during the Year* 1883, *with the Percentages of the Annual Total Com-*

Sailing Vessels.	First Half-Year.		Second Half-Year.		Annual Total.			
	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.		Average 17 previous Years.	
					Number.	Per Cent.	Number.	Per Cent.
Results to Ship—								
Total loss	800	823	894	1,022	1,694	18·91	1,844	18·63
Constructive loss	40	82	29	74	69	0·77	156	1·58
Great damage	395	460	467	595	862	9·60	1,055	10·66
Minor damage	2,002	2,118	2,409	2,498	4,411	49·23	4,615	46·63
Raised after sinking	21	22	8	19	29	0·33	42	0·42
Not damaged or results unknown	830	975	1,065	1,211	1,895	21·15	2,185	22·08
Total	4,088	4,480	4,872	5,420	8,960	—	9,898	—
Results to Cargo so far as reported—								
All lost	364	447	356	483	720	8·03	931	9·40
Part lost	203	235	242	303	447	4·99	532	5·37
All saved	7	16	8	15	15	0·17	31	0·31
Forwarded	7	15	7	8	14	0·16	23	0·23
Heated	4	9	5	9	9	0·10	17	0·18
Shifted	48	56	46	67	94	1·05	126	1·21
Otherwise damaged	82	85	75	78	157	1·75	163	1·65
Salvage Services	262	406	333	470	595	6·64	878	8·87
Lives—								
Crews saved	455	444	498	546	953	10·63	990	10·00
Crews drowned	95	58	56	45	151	1·68	103	1·04
Lives lost so far as reported (in both ships and steamers)	620	943	780	854	1,400	—	1,798	—

Salvage Services, Crews Saved or Drowned and Lives Lost, so far as reported in "Lloyd's pared with the Average Number and Percentage for the Seventeen Previous Years.

First Half-Year.		Second Half-Year.		Annual Total.				Steamers.
1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.		Average 17 previous Years.		
				Number.	Per Cent.	Number.	Per Cent.	
								Results to Ship—
156	74	158	97	314	7·31	171	7·61	Total loss
2	4	—	3	2	0·05	7	0·31	Constructive loss
137	63	132	83	269	6·26	146	6·52	Great damage
1,038	477	1,110	530	2,148	50·00	1,007	44·86	Minor damage
17	8	22	9	39	0·91	17	0·75	Raised after sinking
672	406	852	491	1,524	35·47	897	39·95	Not damaged or results unknown
2,022	1,033	2,274	1,213	4,296	—	2,245	—	Total
								Results to Cargo so far as reported—
68	32	53	35	121	2·82	67	2·97	All lost
92	49	95	59	187	4·35	108	4·82	Part lost
—	1	3	1	3	0·07	3	0·12	All saved
3	1	—	1	3	0·07	2	0·08	Forwarded
1	1	—	1	1	0·02	2	0·10	Heated
42	14	32	19	74	1·72	33	1·47	Shifted
57	29	65	33	122	2·84	60	2·69	Otherwise damaged
105	80	126	84	231	5·38	163	7·24	*Salvage Services*
								Lives—
65	38	79	42	144	3·35	80	3·55	Crews saved
21	7	8	4	29	0·67	10	0·46	Crews drowned
—	—	—	—	—	—	—	—	Lives lost so far as reported (in both ships and steamers)

3.—*A Table showing the Number of Wrecks and Casualties to Sailing Vessels and Steamers Average Number for the same period*

Sailing Vessels.	First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.	
	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.
1. *Missing*	38	29	32	29	19	14	19	14
2. *Abandoned*—								
Recovered	25	19	16	12	9	12	26	31
Lost	63	68	25	46	25	33	55	97
Total	88	87	41	58	34	45	81	128
3. *Collision*—								
Not damaged	133	136	62	92	103	112	161	178
Damaged	295	337	180	213	251	245	351	400
Sunk	45	43	22	32	35	34	62	50
Total	473	516	264	337	389	391	574	628
4. Sinking from causes other than collision	86	81	49	66	65	66	85	108
5. *Stranded*—								
Got off	355	399	295	296	307	286	437	482
Not got off	303	291	140	168	184	177	335	442
Subsequent fate not reported	51	71	19	36	38	44	69	115
Total	709	761	454	500	529	507	841	1,039
6. Capture	—	1	—	1	—	2	—	4
7. Piracy	—	1	—	1	—	1	—	1
8. Burnt or on fire	31	35	20	29	34	31	35	42
9. Dismasted or disabled	99	111	61	78	103	93	92	176
10. Jettison of cargo under deck	42	61	29	33	31	29	33	60
11. Jettison of deckload	55	36	26	21	36	22	94	108
12. Leaky	286	310	174	188	216	231	291	395
13. Loss of anchor or chains	155	171	20	50	64	47	168	220
14. Mutiny, sickness, &c.	29	68	12	42	18	44	34	63
15. Ship damaged, &c.	779	737	294	356	454	351	785	906
16. Water-logged	5	5	5	5	6	6	7	13
Number of casualties	2,875	3,006	1,481	1,792	1,998	1,881	3,139	3,905
Number of vessels	2,672	2,779	1,416	1,700	1,898	1,798	2,974	3,621

reported in "Lloyd's List," during the Four Quarters of the year 1883, *Compared with the of the Seventeen Previous Years.*

First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.		Steamers.
1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	
7	5	13	2	3	1	4	3	1. *Missing*
1	—	—	—	—	—	—	—	2. *Abandoned*— Recovered
4	1	—	1	—	1	1	1	Lost
5	2	—	1	—	1	1	2	Total
121	88	113	71	127	86	205	119	3. *Collision*— Not damaged
162	80	106	53	121	68	203	99	Damaged
16	8	17	5	18	7	14	10	Sunk
299	176	236	130	266	161	422	228	Total
21	12	14	10	22	10	24	19	4. Sinking from causes other than collision
233	126	182	103	226	102	288	155	5. *Stranded*— Got off
41	21	30	15	33	17	49	33	Not got off
1	6	4	4	6	3	9	7	Subsequent fate not reported
275	153	216	122	265	122	346	195	Total
—	—	—	—	—	—	—	1	6. Capture
—	—	—	—	—	—	—	—	7. Piracy
34	13	29	14	34	14	45	18	8. Burnt or on fire
19	5	2	3	4	3	8	8	9. Dismasted or disabled
27	13	23	11	14	8	11	13	10. Jettison of cargo under deck
9	7	2	2	8	3	23	12	11. Jettison of deckload
43	15	7	12	23	10	25	17	12. Leaky
21	9	5	3	6	3	10	10	13. Loss of anchor or chains
205	109	154	91	185	95	236	129	14. Mutiny, sickness, &c.
2	5	1	4	4	5	—	5	15. Ship damaged, &c.
322	97	70	47	101	33	205	119	16. Water-logged
1,289	621	772	452	935	468	1,360	777	Number of casualties
1,269	599	753	433	921	457	1,353	755	Number of vessels

4.—*A Table showing the Results of Wrecks and Casualties to Ship and Cargo, with List," during the Four Quarters of* 1883, *Compared with the Average*

Sailing Vessels.	First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.	
	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.
Results to Ship—								
Total loss	528	494	272	329	342	319	552	703
Constructive loss	22	48	18	34	14	35	15	38
Great damage	240	286	155	174	232	197	235	398
Minor damage	1,356	1,369	646	748	925	797	1,484	1,701
Raised after sinking	14	13	7	10	3	9	5	10
Not damaged or results unknown	512	569	318	405	382	440	683	771
Total	2,672	2,779	1,416	1,700	1,898	1,798	2,974	3,621
Results to Cargo so far as reported—								
All lost	233	281	131	167	139	153	217	331
Part lost	127	147	76	87	100	84	142	220
All saved	4	11	3	5	1	5	7	10
Forwarded	5	9	2	5	2	4	5	4
Heated	3	6	1	3	2	4	3	5
Shifted	31	39	17	20	17	16	29	51
Otherwise damaged	43	49	39	36	40	35	35	42
Salvage services	161	264	101	142	118	151	215	320
Lives—								
Crews saved	307	280	148	172	198	166	300	381
Crews drowned	58	34	37	23	24	13	32	31
Lives lost so far as reported (in both ships and steamers)	415	461	205	470	271	275	509	579

Salvage Services, Crews Saved or Drowned and Lives Lost, so far as reported in "Lloyd's Number for the same period of the Seventeen Previous Years.

First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.		Steamers.
1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	1883.	Average 17 previous Years.	
								Results to Ship—
83	44	73	31	74	34	84	63	Total loss
2	2	—	2	—	1	—	1	Constructive loss
75	36	62	27	60	32	72	51	Great damage
707	282	331	195	442	196	668	335	Minor damage
11	4	6	4	11	3	11	6	Raised after sinking
391	231	281	175	334	191	518	299	Not damaged or results unknown
1,269	599	753	433	921	457	1,353	755	Total
								Results to Cargo so far as reported—
36	20	32	12	28	13	25	22	All lost
50	27	42	22	41	20	54	39	Part lost
—	1	—	1	1	—	2	1	All saved
2	1	1	—	—	—	—	—	Forwarded
1	1	—	—	—	1	—	1	Heated
37	11	5	4	5	3	27	16	Shifted
32	15	25	12	25	13	40	21	Otherwise damaged
44	43	61	37	66	34	60	50	Salvage services
								Lives—
32	22	33	16	41	15	38	26	Crews saved
9	5	12	2	3	1	5	3	Crews drowned
—	—	—	—	—	—	—	—	Lives lost so far as reported (in both ships and steamers)

III.—*Emigration and Immigration in the Year* 1883.

The following is a copy of Mr. Giffen's report to the Secretary of the Board of Trade, on the "Statistical Tables relating to Emigration and Immigration from and into the United Kingdom in the year 1883:"—

"In the year 1883, for the first time since 1877, there has been a decrease in the emigration from the United Kingdom. In each of the years 1878-82, inclusive, there was a large increase, the total in 1877 being 119,971, and in 1882, 413,288; but now it would appear a turn in the opposite direction has commenced. In 1883 the total emigration was 397,157 only, a reduction of rather more than 16,000 as compared with the previous year. The peculiarity has to be noticed, however, that while the figures of total emigration show a decrease, the emigration of persons of British and Irish origin only shows a very large increase. Consequently, if we look at the matter from the point of view of the United Kingdom only, we have still to speak of emigration as showing an increase up to and inclusive of last year. This increase is accompanied by an increase of immigration, which may be considered to foreshadow a turn in the opposite direction if it does not actually imply the beginning of such a change; but nothing so decisive as we find with reference to the emigration of foreigners is yet manifest. The emigration of persons of British and Irish origin only in 1883 was actually much the largest on record, the total being 320,118, or upwards of 40,000 more than in the previous year 1882, which up to that date had shown the largest total.

"These general figures as to emigration alone, without taking into account the immigration, are as follows:—

(*a.*) *Increase or Decrease of Emigration.*

	Total, including Foreigners.	Emigrants, of British and Irish Origin only.
Number of emigrants in 1883	397,157	320,118
„ '82	413,288	279,366
Increase	—	40,752
Decrease	16,131	—

"Thus the decrease in the total emigration, as compared with 1882, amounts exactly to 16,131, the increase at the same time in the case of emigrants of British and Irish origin only being 40,752. It would appear then that the emigration of foreigners only, or of persons whose nationality is not distinguished, has diminished in the year by the large total of 56,883, or between a third and a half. It will be seen from Table I annexed, that the diminution in the case of foreigners only is from 130,029 to 73,260. How it happens

that this change has taken place in the emigration of foreigners while the emigration of persons of British and Irish origin has continued to increase does not appear on the surface of the figures; and in the course of collecting the statistics no facts have come to the knowledge of the department which would certainly explain the difference. In last year's report it was suggested, for reasons there stated, that a small decline in the foreign emigration, which had then become apparent, might possibly be accounted for to some extent by a change in the route of the emigration, foreigners going directly from the Continent of Europe to their destination, instead of coming through the United Kingdom.* The great decline of last year, however, cannot be at all accounted for in this way. There has undoubtedly been an actual decline in the emigration from Germany and other parts of Europe, corresponding to the decline shown in the number of foreign emigrants passing through the United Kingdom. What I may suggest as to the cause of the difference in the movement of foreign and of British emigration is that the emigration from the United Kingdom in 1883 was to some extent specially stimulated, this being the case, as is well known, with reference to the Irish emigration, and being also the case, it would appear, with reference to the English emigration to Australasia, which has always been more or less an 'assisted' emigration, and which increased very largely during 1883.

"In the last report it was noticed that although the emigration of persons of British and Irish origin only was larger in 1882 than it had been known to be previously, yet the proportion to the population was smaller than it was thirty years ago, namely, in 1853 and 1854, when the numbers were very nearly as large as they were in 1882. In 1883, however, the proportion to the population is again

* One of the reasons for drawing attention to this question of change of route in my last report was the fact of a certain portion of the emigration from the United Kingdom going to the United States by way of the continental ports: Antwerp, Rotterdam, and Amsterdam. It would appear, however, that the number of emigrants proceeding by way of continental ports in 1883 was smaller than in 1882. The following is an account of the emigration by this route, the figures being inserted here for future reference, and in continuation of those of last year:—

Nationality.	Adults.				Children under 12 Years of Age and Infants.		Total.	
	Married.		Single.					
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
English	259	193	1,404	168	195	198	1,858	559
Scotch	46	21	130	13	12	14	188	48
Irish	52	27	164	34	22	17	238	78
Total British..	357	241	1,698	215	229	229	2,284	685
Foreigners	98	47	256	57	33	39	387	143
Grand total....	455	288	1,954	272	262	268	2,671	828

a very high one, the ratio being 0·90 per cent. as compared with 1·01 and 0·97 per cent. in 1853 and 1854.

"There is nevertheless some foreshadowing of a turn in the opposite direction, and this appears from the figures of immigration, which also show a large increase during the past year. These are:—

(*b.*) *Increase of Immigration.*

	Total, including Foreigners.	Immigrants of British and Irish Origin only.
Number of immigrants in 1883	100,503	73,804
„ '82	82,804*	54,711*
Increase	17,699	19,093

* As the above figures for 1882 do not agree with those published in the report for that year, the subjoined corrected account of immigration in 1882 is published. The corrected figures will be used in future.

Nationality.	Countries whence Arrived.					Total for 1882.
	United States.	British North America.	Australasia.	Cape of Good Hope and Natal.	All other Places.	
British and Irish..	28,468	6,097	6,871	6,499	6,776	54,711
Foreigners	19,493	560	447	888	1,194	22,582
Not distinguished	5,454	57	—	—	—	5,511
Total	53,415	6,714	7,318	7,387	7,970	82,804

"From this it would appear that while the total number of immigrants in 1882 was 82,804, the number in 1883 was 100,503, an increase of 17,699. The increase of immigrants of British and Irish origin only was even larger, the numbers being 54,711 in 1882, and 73,804 in 1883, an increase of 19,093. It has frequently been noticed in former reports that the increase of immigration, along with an increase of emigration, foreshadows a turn in the tide of emigration itself, the increase in the number of persons returning home appearing to be due to causes which also diminish the temptation to emigrants to go away. It remains to be seen whether this rule will hold good in the present case. Large as the figure of immigration in 1883 was, it was smaller than the amount recorded in one previous year, namely, 1874, when the total was 118,129. If there is any truth in the notion that the tide is turning, emigration during the present year should show some diminution, while the figure of immigration ought to be the largest on record.

"Putting the facts as to the difference between emigration and immigration—the excess of emigrants—in the usual way, we have the following table:—

(*c.*) *Increase of Excess of Emigrants.*

	Total Emigration and Immigration.	Emigration and Immigration of Persons of British and Irish Origin only.
Number of emigrants in 1883.....	397,157	320,118
„ immigrants '83.....	100,503	73,804
Excess of emigrants	296,654	246,314
Corresponding excess in 1882	330,484*	224,655*
„ '81	315,409	190,295
„ '80	263,978	180,535
„ '79	163,190	126,338
„ '78	69,712	57,958
„ '77	38,123	31,305
„ '76	44,665	38,065

* See note to Table (*b.*) *ante.*

"Thus while the excess of emigrants in the case of the total emigration and immigration shows a decline corresponding to the decrease in the total emigration and the increase in the total immigration, there is still, notwithstanding the increase of immigration, a considerable increase in the excess of emigrants of British and Irish origin only. The total is 246,314 as compared with 224,655 in 1882, or nearly eight times the excess of emigrants in years like 1876 and 1877, when the emigration movement was at its lowest ebb. It appears certain, although we cannot carry the account of the excess of emigrants, as regards persons of British and Irish origin only, further back than 1876, that the loss of population to the United Kingdom by emigration in 1883, must have been larger than in any previous year, while the proportion to the population must also have been very large.

"The peculiarity is also to be noticed, which has been more than once referred to in former reports, that the emigration is now much more largely an emigration of English and Scotch persons than it was in former periods when large figures of emigration had to be recorded. Although there was a considerable increase of Irish emigration last year, the proportion of the Irish emigration to the total for the United Kingdom, as will afterwards be seen, was still no more than 33 per cent., whereas in the period 1853-55 it was over 61 per cent.

"In corroboration of the view that the increase of immigrants is the forerunner of a decline of emigration, it has also to be noticed that the changes in the state of trade which are going on also point to a diminution of emigration. When trade begins to be dull and depressed, emigration according to former experience seems to fall off. We should, therefore, expect that after the dull trade of 1883, not only in this country but in the United States, emigration in 1884 would be less, and the return of immigrants, from the United States especially, would be larger. This has been

the usual history in former periods, and it remains to be seen whether the new facts will correspond.

"Reference has already been made to the large increase in the emigration to Australasia as one of the distinguishing features of the emigration movement last year. The fact is very strikingly brought out in the usual table which this report contains, showing the destination of the excess of emigrants among persons of British and Irish origin only, which is as follows:—

Destinations of Excess of Emigrants over Immigrants among Persons of British and Irish Origin only in the Undermentioned Years.

Country of Emigration and Immigration.	Excess of Emigrants in							
	1876.	1877.	1878.	1879.	1880.	1881.	1882.†	1883.
United States	(−) 143*	603	20,654	71,758	140,052	146,323	153,435	144,870
British N. America	2,706	2,033	4,448	14,455	16,214	18,151	34,344	37,164
Australasia	29,617	25,501	32,272	35,992	18,274	16,805	30,418	64,420
All other parts	5,885	3,168	584	4,133	5,995	9,016	6,458	(−) 140*
Total	38,065	31,305	57,958	126,338	180,535	190,295	224,655	246,314

* Excess of immigrants. † See note to Table (*b*) *ante*.

"From this it would appear that while the excess of emigrants to the United States in the year showed a falling off of about 9,000, namely, from 153,435 to 144,870, and the increase in the excess of emigrants to British North America was 3,000 only, namely, from 34,344 to 37,164; and while as regards all other parts, excluding Australasia, the excess of emigrants in 1882, amounting to 6,458, was converted in 1883 into a small excess of immigrants, yet the increase in the excess of emigrants to Australasia was from 30,418 in 1882 to no less a figure than 64,420 in 1883. This last figure is much the largest on record since this account has been made up, namely since 1876, being nearly four times larger than the amount to which the excess of emigrants to Australasia fell in 1880 and 1881. Assuming that the emigration to Australasia is very largely an assisted emigration, it is evident for some reason or other the Australasian Governments during the last two years must have been devoting unusually large sums to this purpose, a fact which would appear to correspond with many other signs of the rapid development of the Australasian colonies in recent years. The falling off in the excess of emigrants to all other parts is almost exclusively accounted for by a diminution in the numbers of passengers to the Cape of Good Hope.

"The following summary tables showing the numbers of cabin and steerage passengers included in the tables of emigration, is continued from former reports. The total emigration having declined, there is noticeable a corresponding decline in the number of steerage passengers, which agrees with the observation that has frequently been made in former reports, that the changes in the

number of steerage passengers correspond with the changes of the number of emigrants.

Numbers of Cabin and Steerage Passengers leaving the United Kingdom for Places out of Europe, in each of the Years from 1876 *to* 1883 *inclusive.*

Years.	Cabin Passengers.	Steerage Passengers.	Total.
1876	41,900	96,322	138,222
'77	37,147	82,824	119,971
'78	43,168	104,495	147,663
'79	43,928	173,235	217,163
'80	50,734	281,560	332,294
'81	54,270	338,244	392,514
'82	56,739	356,549	413,288
'83	55,840	341,317	397,157

"The very different proportion of the English, Scotch, and Irish persons in the total emigration of persons belonging to the United Kingdom as compared with what the proportions used to be, has already been noticed. This difference in proportion continued to exist last year, although it appears from the continuation of the usual summary table in this report that last year the proportion of Irish persons increased 3 per cent. as compared with 1882.

Statement of the Number and Proportion of Persons of English, Scotch, and Irish Birth respectively, in the Total Emigration of Persons of British Origin at different Periods.

Period.	English.		Scotch.		Irish.		Total.
	Number.	Per-centage of Total.	Number.	Per-centage of Total.	Number.	Per-centage of Total.	
Three yrs. 1853-55	211,013	30	62,514	9	421,672	61	695,199
Five years '56-60	243,409	39	59,016	10	315,059	51	617,484
" '61-65	236,838	33	62,461	9	418,497	58	717,796
" '66-70	368,327	43	85,621	10	400,085	47	854,033
" '71-75	545,015	56	95,055	10	329,467	34	969,537
Year 1876	73,396	67	10,097	9	25,976	24	109,469
" '77	63,711	67	8,653	9	22,831	24	95,195
" '78	72,323	64	11,087	10	29,492	26	112,902
" '79	104,275	64	18,703	11	41,296	25	164,274
" '80	111,845	49	22,056	10	93,641	41	227,542
" '81	139,976	58	26,826	11	76,200	31	243,002
" '82	162,992	58	32,242	12	84,132	30	279,366
" '83	183,236	57	31,139	10	105,743	33	320,118

"While the increase in the Irish emigration was thus much larger in proportion, yet the increase in the English emigration was nearly equal in amount, the increase in the Irish emigration

being from 84,132 in 1882 to 105,743, or 21,611, and the increase in the English emigration being from 162,992 in 1882 to 183,236, or 20,244, the figure of Scotch emigration being little changed. The fact of emigration now consisting much more largely than it did of English persons appears to be very important, and should not be lost sight of in any inference that may be drawn from these emigration figures.

"In last year's report attention was drawn at some length to certain differences in the character of English as distinguished from Irish emigration, particularly in the larger proportion of single female adult emigrants, and the smaller proportion of children in the emigration of Irish persons than in that of English or Scotch. This difference in the character of the emigration continues noticeable; and without further comment, I have again to draw attention to Table 15 appended, which brings out the facts, merely referring to the observations on the subject in my last year's report.

"The usual tables are added, showing in detail the sex, age, condition, and occupations of the emigrants; the numbers departing from each of the ports of the United Kingdom; the particulars of detention money recovered by emigration officers; and the amount of remittances by settlers in the United States and British North America to friends at home; besides comparative tables. With regard to these remittances, however, I have again to repeat the remark of former reports, that the data are necessarily very incomplete."

IV.—*Local Taxation Returns* (*England*) *for the Year* 1881-82.

The following memorandum is taken from "the Annual Local Taxation Returns (England) for the year 1881-82:"—

"This is the twelfth annual return of local taxation which has been prepared and issued under the direction of the Local Government Board.

"It contains abstracts of the receipts and expenditure of the various local authorities of England and Wales during the last financial year of which the statistics have as yet been received. This year in the case of 10,214 out of the total of 12,753 local authorities is the year ended at Lady Day, 1882. As regards the accounts of the commissioners of police of the metropolis, and of churchwardens in respect of church rates, it is the year ended on the 31st of March, 1882, and the year ended at Easter Day, 1882, respectively. So far as the Metropolitan Board of Works and the Corporation of London are concerned, the year ends on the 31st of December, 1881, and in the case of school boards and the commissioners of sewers of the city of London, on the 29th of September, 1881. As regards the remaining local authorities, it ends at various dates between the 31st of May, 1881, and the 1st of June, 1882.

"In previous returns the statistics relating to the receipts and expenditure of turnpike trustees and highway authorities in rural districts have been a year in arrear as compared with those furnished by other local authorities. This year they are no longer so; but in order to preserve the continuity of these annual returns, it has been considered desirable to include in the present return abstracts of the receipts and expenditure of these authorities for the two years ended at Lady Day, 1882.

"The amount shown in the present return as having been received by the local authorities of England and Wales during the financial year, is 57,360,617*l.*, of which 27,959,953*l.* was obtained by means of rates, 5,042,044*l.* is attributable to tolls, dues, duties, fees, and rents of corporate property, 15,351,914*l.* was raised by way of loan, 2,053,508*l.* was received from grants by parliament in aid of local taxation, and 6,953,198*l.* was contributed from various other sources. The total expenditure of the local authorities during the year was 54,718,927*l.**

"On the following page will be found a table (Table I) showing how much of the above expenditure has been incurred, and what have been the proportions of the above sums which have been received by the several classes of local authorities during the year.†

"For the purpose of enabling a comparison to be made of the aggregate amounts levied as rates by or for each of these classes of authorities during the last few years, and also a comparison of the loans of such authorities outstanding at the close of each of such years, Tables II and III will be found on a subsequent page giving these particulars for each of the financial years from 1877-82, both inclusive. From these tables it will be seen that the aggregate amount of the rates levied in England and Wales has risen from 23,366,209*l.* in 1877, to 27,959,953*l.* in 1882; and that the amount

* "The receipts and expenditure of local authorities as stated in this paragraph do not include the amounts received and expended on account of light dues and lighthouses, and on account of pilotage dues and pilotage. On the former account, during the year ended the 31st of March, 1881, the receipts were 435,789*l.*, and the expenditure 373,723*l.* On the latter, during the year ended 31st of December, 1881, the receipts were 394,378*l.*, and the expenditure 392,744*l.*

"The receipts of local authorities from 'other sources' include (*inter alia*) proceeds of sales of property, premiums and fines on leases, dividends on invested securities, proceeds of the sale of residual products in gas undertakings, and a great number of other miscellaneous receipts.

† "In this table, precept rates raised by one class of local authority and paid by them to another, with the exception of those paid to port sanitary authorities by urban and rural sanitary authorities, are included only amongst the receipts and expenditure of the local authorities to whom they are paid, and by whom they are ultimately expended. In the case of port sanitary authorities it had been necessary to make an exception to this rule, because these rates have been raised partly by urban and partly by rural sanitary authorities, and the returns do not enable the amounts raised by each class of authority to be distinguished. In this case, however, the total amount of the precept rates has been subsequently deducted from the total receipts and expenditure of the local authorities. A similar course is adopted in Table II.

of the outstanding local debt has increased from 106,045,465*l.* to 151,704,640*l.* during the same period. It should, however, be borne

TABLE I.—*The following Table shows the Amounts Received and*

Local Authorities.	Years ended.	Receipts.		
		Rates.	Tolls, Dues, Duties, Fees, and Rents.	Treasury Subventions.
		£	£	£
Poor Law Authorities	Lady Day, 1882	8,335,918	—	537,196
County „	„	1,889,365(1)	162,490	579,896
Municipal Corporations	„(2)	1,407,363	607,428	399,881
Town Councils acting as Urban Sanitary Authorities	„(2)	6,500,941	305,334	8,233
Urban Sanitary Authorities other than Town Councils (including Joint Boards)	„	2,583,780	39,463	15,573
Rural Sanitary Authorities	„	242,486(3)	—	40,879
Port „	„	2,833(4)	—	964
Highway Authorities in rural districts	„	1,704,784	—	—
Turnpike Trustees	„	—	135,193	—
Burial Boards	„	148,953	149,889	—
Commissioners of Baths and Washhouses	„	6,250	—	—
Inspectors under the Lighting and Watching Act (2 and 3 Will. 4, c. 90)	„	36,266	—	—
Metropolitan Vestries and District Boards(5)	„(6)	1,607,391	—	—
Metropolitan Board of Works	31 Dec., 1881	639,582	402,228	10,000
Commissioners of Police of the Metropolis	31 Mar., '82	583,967	28,784	459,167
„ Sewers of the City of London	29 Sept., '81	142,776	—	—
Corporation of London	31 Dec., '81	75,670	843,137	1,719
School Boards	29 Sept., '81	1,764,227	419,727	—
Commissioners of Sewers	(6)	61,902	—	—
Drainage, Embankment, and Navigation Boards	(6)	216,467	5,090	—
Churchwardens (church rates)	Easter Day, 1882	11,865	—	—
Markets and Fairs Commissions	(6)	—	24,536	—
Bridges and Ferries „	(6)	—	68,158	—
Harbour Authorities	(6)	—	2,136,085	—
Totals	—	27,962,786	5,327,542	2,053,508
Deduct—				
Contributions to main roads	—	—	—	—
„ Port Sanitary Authorities	—	2,833(4)	—	—
Advances to Local Authorities by Metropolitan Board of Works	—	—	—	—
Receipts of Metropolitan Board of Works from Coal and Wine Duties	—	—	285,498(8)	—
Net totals	—	27,959,953	5,042,044	2,053,508

(1). The rates and expenditure of county authorities include sums raised and expended in respect of contributions to rural districts, under the head of 'All other Sources, excluding Loans.' The sums thus received are subsequently are deducted from the totals of the receipts and expenditure of local authorities.

(2). Except in the case of nine corporations.

(3). Excluding the contributions from parishes, and the expenditure for the maintenance of highways which are

(4). The sum of 2,833*l.*, being contributions paid by the riparian sanitary authorities, is excluded from the total of the

(5). The receipts and expenditure of these authorities include sums raised and expended for free libraries at West-

(6). Some day between the 31st of May, 1881, and the 1st of June, 1882.

(7). The loans, receipts, and expenditure of the Metropolitan Board of Works include 765,783*l.* advanced to other to avoid a duplicate reckoning. From the expenditure of the Metropolitan Board of Works there is deducted a sum of

(8). The sum of 285,498*l.* was received during the year by the Metropolitan Board of Works in respect of coal and of the local authorities, the whole amount received and paid out of these duties during the year by the Corporation of

in mind that a considerable proportion of these rates and loans has been raised for the purpose of reproductive expenditure.

Expended by the various Local Authorities during the Financial Year.

Receipts.			Total Expenditure.	Local Authorities.
All other Sources, excluding Loans.	Loans.	Total.		
£	£	£	£	
433,396	513,562	9,820,072	9,252,976	Poor Law Authorities
251,093	365,237	3,248,081(1)	3,063,182(1)	County ,,
590,941	789,669	3,795,282	3,568,444	Municipal Corporations
2,847,835(1)	6,570,612	16,232,955(1)	16,480,064(1)	Town Councils acting as Urban Sanitary Authorities
718,951(1)	1,361,412	4,719,179(1)	3,340,047(1)	Urban Sanitary Authorities other than Town Councils (including Joint Boards)
28,235	178,671	490,271(3)	499,528(3)	Rural Sanitary Authorities
412	—	4,209(4)	9,035(4)	Port ,,
256,817(1)	641	1,962,242	1,947,853(1)	Highway Authorities in Rural Districts
24,987	—	160,180	174,227	Turnpike Trustees
29,469	103,075	431,386	456,699	Burial Boards
22,760	697	29,707	31,363	Commissioners of Baths and Washhouses
829	—	37,095	37,688	Inspectors under the Lighting and Watching Act (2 and 3 Will. 4, c. 90)
263,769	238,600	2,109,760	2,143,513	Metropolitan Vestries and District Boards(5)
565,195	2,512,673(7)	4,129,678(7)	3,451,262(7)	Metropolitan Board of Works
153,706	—	1,225,624	1,221,308	Commissioners of Police of the Metropolis
61,601	200,000	404,377	329,813	,, Sewers of the City of London
64,044	1,096,819	2,081,389	1,971,570	Corporation of London
741,657	1,046,223	3,971,834	3,821,837	School Boards
17,857	—	79,759	73,336	Commissioners of Sewers
32,644	120,109	381,310	369,610	Drainage, Embankment, and Navigation Boards
1,019	—	12,884	13,099	Churchwardens (church rates)
847	3,000	28,383	17,509	Markets and Fairs Commissions
1,867	6,005	76,030	55,589	Bridges and Ferries ,,
146,999	1,010,692	3,293,776	3,754,221	Harbour Authorities
7,263,930	16,117,697	58,725,463	56,083,773	Totals
310,732(1)	—	310,732(1)	310,732(1)	*Deduct*— Contributions to main roads
—	—	2,833(4)	2,833(4)	,, to Port Sanitary Authorities
—	765,783	765,783	765,783	Advances to Local Authorities by Metropolitan Board of Works
—	—	285,498(8)	285,498(8)	Receipts of Metropolitan Board of Works from Coal and Wine Duties
6,953,198	15,351,914	57,360,617	54,718,927	Net totals

main roads, and these contributions are entered in the receipts of urban sanitary authorities and highway authorities in expended by the urban sanitary authorities and highway authorities. In order to avoid a duplicate reckoning, these sums

included in the receipts and expenditure of highway authorities in rural districts.

receipts and expenditure of local authorities, in order to avoid a duplicate reckoning.

minster, and for the conservation of Wandsworth Common.

local authorities, which is deducted from the total of the loans, receipts, and expenditure of the local authorities, in order 550,000*l.* invested in treasury bonds.

wine duties. In order to avoid a duplicate reckoning, this sum is deducted from the totals of the receipts and expenditure London being included in the receipts and expenditure of that corporation.

TABLE II.—*The following Table shows the Aggregate Amounts of the Rates Levied by or for the several Local Authorities of England and Wales in each of the Financial Years from* 1877 *to* 1882, *both inclusive.*

Local Authorities.	Number of Local Authorities who have made Returns for the Year 1881-82.	1881-82.	1880-81.	1879-80.	1878-79.	1877-78.	1876-77.
	No.	£	£	£	£	£	£
Poor Law Authorities	647 unions	8,335,918	7,969,845	7,846,021	7,942,881	7,502,229	7,278,370
County „ (1)	63	1,889,365	1,745,237	1,667,811	1,481,380	1,688,309	1,707,645
Municipal Corporations	244	1,407,363	1,349,128	1,242,518	1,266,900	1,454,668	1,477,292
Town Councils acting as Urban Sanitary Authorities	225	6,500,941	6,446,051	5,917,842	6,098,486	7,639,414	7,229,180
Urban Sanitary Authorities other than Town Councils, including Joint Boards	760	2,583,780	2,465,971	2,429,193	2,324,111		
Rural Sanitary Authorities(2)	576	242,486	220,651	199,939	200,802	193,928	177,700
Port „ (3)	40	[2,833]	[2,385]	[2,325]	[1,612]	[16,182]	[1,551]
Highway Authorities in Rural Districts	434 boards) 6,037 parishes)	1,704,784	1,876,243	1,821,041	1,778,828	1,796,724	1,616,884
Turnpike Trustees	190	—	—	—	—	—	—
Burial Boards	737	148,953	130,229	123,754	132,530	141,457	119,359
Commissioners of Baths and Washhouses	9	6,250(4)	—	—	—	—	—
Inspectors under the Lighting and Watching Act (2 and 3 Will. 4, c. 90)	192	36,266	37,884	36,190	40,507	40,215	42,518
Metropolitan Vestries and District Boards	42	1,607,391	1,580,561	1,655,975	1,568,376	1,443,629	1,411,699
Metropolitan Board of Works	1	639,582	620,957	554,448	475,412	455,355	472,711
Commissioners of Police of the Metropolis	1	583,967	555,844	510,205	538,086	525,626	510,100
Commissioners of Sewers of the City of London	1	142,776	173,780	140,686	149,690	201,678	113,480
Corporation of London	1	75,670	81,653	67,154	66,629	64,155	72,109
School Boards	2,017	1,764,227	1,562,385	1,484,312	1,327,078	1,104,144	868,419
Commissioners of Sewers	52	61,902	57,817	52,932	59,195	56,616	49,846
Drainage, Embankment, and Navigation Boards and Commissioners	165	216,467	202,380	205,628	206,251	212,699	206,818
Churchwardens (church rates)	202	11,865	11,996	13,507	10,858	11,431	12,079
Markets and Fairs Commissions	16	—	—	—	—	—	—
Bridges and Ferries „	36	—	—	—	—	—	—
Harbour Authorities	65	—	—	—	—	—	—
Total	—	27,959,953	27,088,612	25,969,156	25,668,010	24,532,277	23,366,209

(1). Including amounts raised by rates for the purpose of contributions to main roads.

(2). The amounts entered in this table as raised as rates by rural sanitary authorities for the last two years are exclusive of the contributions from parishes for the maintenance of highways, which are included below in the amount stated to have been raised as rates by highway authorities in rural districts.

(3). These are contributions from the riparian sanitary authorities, and are therefore omitted from the totals in order to avoid a duplicate reckoning.

(4). This is the first year in which returns have been received from these commissioners.

TABLE III.—*The following Table shows the Aggregate Amount of the Outstanding Loans of the Local Authorities in England and Wales at the Close of each of the Financial Years from* 1877 *to* 1882, *both inclusive.*

Local Authorities.	Loans Outstanding at the Close of the Years.					
	1881–82.	1880–81.	1879-80.	1878–79.	1877–78.	1876–77.
	£	£	£	£	£	£
Poor Law Authorities	5,560,720	5,271,303	4,975,980	4,653,617	4,260,767	3,893,771
County ,,	3,112,185	2,995,311	2,924,915	2,963,014	3,012,117	2,981,999
Municipal Corporations	6,836,034	6,495,112	6,172,887	6,313,217	6,421,082	6,221,037
Town Councils acting as Urban Sanitary Authorities	55,558,329	53,213,834	50,325,471	46,666,978	46,183,928	41,539,549
Urban Sanitary Authorities other than Town Councils	13,600,728	12,818,333	11,354,152	10,067,472		
Rural Sanitary Authorities	1,218,218	1,081,056	848,198	642,617	451,680	330,313
Port ,,	5,042	5,237	5,484	—	—	—
Highway Authorities in Rural Districts	42,860	47,584	49,580	49,190	49,754	47,536
Turnpike Trustees	342,458	420,294	550,237	713,164	1,009,998	1,283,017
Burial Boards	1,835,385	1,717,612	1,682,009	1,664,829	1,589,852	1,238,874
Commissioners of Baths and Washhouses	126,516*	—	—	—	—	—
Inspectors under the Lighting and Watching Act (2 & 3 Will. 4, cap. 90)	—	—	—	—	—	—
Metropolitan Vestries and District Boards	2,147,143	2,145,526	2,140,496	1,936,723	1,901,220	1,708,113
Metropolitan Board of Works†	16,669,641	15,245,229	14,645,816	13,126,259	11,898,706	11,257,190
Commissioners of Police of the Metropolis	—	—	—	—	—	—
Commissioners of Sewers of the City of London	458,809	265,951	276,053	336,775	346,775	356,775
Corporation of London	5,470,150	5,274,800	5,129,800	5,186,000	5,376,000	5,531,000
School Boards	11,841,142	10,858,988	9,937,152	8,685,093	7,188,900	5,456,361
Commissioners of Sewers	68,793	78,519	66,598	66,901	57,298	88,671
Drainage, Embankment, and Navigation Boards and Commissioners	1,676,768	1,535,740	1,550,510	1,541,294	1,569,448	1,522,802
Churchwardens	34,091	41,800	48,467	40,259	44,012	50,803
Markets and Fairs Commissions	73,062	83,422	86,788	86,980	93,854	95,565
Bridges and Ferries ,,	211,891	210,926	213,472	213,646	222,374	227,965
Harbour Authorities	24,815,675	24,396,722	23,950,405	23,165,561	22,734,436	22,214,124
Total	151,704,640	144,203,299	136,934,470	128,119,589	114,412,201	106,045,465

* This is the first year in which returns have been received from these commissioners.

† The sums stated to be outstanding loans of the Metropolitan Board of Works are exclusive of the amounts advanced to Metropolitan local authorities by the Board, which are omitted, in order to avoid a duplicate reckoning. The outstanding loans thus advanced at the close of the financial year 1882, amounted to 3,990,686*l.*

"In the following summary a comparison is made of the total amounts received by the local authorities of England and Wales during the financial years 1880-81 and 1881-82, (1) from rates; (2) from tolls, fees, dues, and duties; (3) from treasury subventions; (4) from loans; and, (5) from other sources. It appears from this summary that in 1881-82, as compared with 1880-81, there was an increase of 3·2 per cent. in the receipts from rates, and of 2·7 per cent. in the receipts from tolls, fees, dues, and duties. There was an increase in the indebtedness of local authorities, as shown by the amount of loans raised, of 15 per cent., and an increase in 'other receipts,' of 12·6 per cent. On the other hand, there is a slight decrease in the amount of 'treasury subventions' received. This is, however, not to be accounted for by a decrease in the amounts of the government grants in aid, but by the fact that in some years a larger proportion of the sums granted appears in the accounts of the local authorities than in others, the grant not being received until after the end of the year.

Local Taxation Summary, 1880-81 *and* 1881-82.

Source of Receipt.	1880-81.	1881-82.	Increase or Decrease.	Increase or Decrease per Cent.
	£	£	£	
Rates	27,088,612	27,959,953	+ 871,341	+ 3·2
Tolls, fees, dues, and duties	4,493,357	4,613,720	+ 120,363	+ 2·7
Treasury subventions	2,088,807	2,053,508	− 35,299	− 1·7
Loans raised	13,351,935	15,351,914	+ 1,999,979	+ 15·0
Other receipts	6,554,091	7,381,522	+ 827,431	+ 12·6
Total	53,576,802	57,360,617	3,783,815	+ 7·1

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Nachrichten über Industrie, Handel und Verkehr, aus dem Statistischen Departement im k. k. Handels-Ministerium. XXVIII Band. Statistik der oesterreichischen Industrie nach dem Stande vom Jahre 1880	Dr. H. F. Brachelli
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Statistisches Jahrbuch für Ungarn. 12*er. Jahrgang*, 1882. *La.* 8*vo.*, 1884—	
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IV Heft, Bergbau und Hüttenwesen im Jahre 1882	
Magyarország Arúforgalma Ausztriával és más Országokkal. Fuzet, 1 2, la. 4to. 1884. (Monthly Trade Statistics)	
Prague. Bulletin hebdomadaire de la ville de Prague et des communes-faubourgs. (Current numbers)	The Statistical Bureau of Prague
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Annuaire Statistique de la Belgique, Quatorzième Année 1883. Tome XIV	TheDirector-General of the Statistical Bureau, Ministry of the Interior.
Bulletin de la Commission Centrale de Statistique. Tome XV. Statistique financière des communes en 1875, et rapprochements avec la statistique de 1865; Mouvement de l'état civil et de la population, 1867-81. 4to. 1883	

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Hamonet (Alfred). The French Directory (22nd year). Annuaire Commercial et Industriel, Guide général à l'usage des Français en Angleterre, 1883. 440 + 15 pp., map and illustrations, 8vo.	The Author
John (Dr. jur. V.). Geschichte der Statistik. Ein quellenmässiges Handbuch für den Akademischen gebrauch wie für den Selbstunterricht von—. Erster Teil. Von dem Ursprung der Statistik bis auf Quetelet (1835). xv + 376 pp., 8vo. Stuttgart, 1884	,,
Johnston (Rev. J.). Abstract and Analysis of the Report of the "Indian Education Commission," with Notes, and "the Recommendations" in full. ix + 184 pp., cloth, 8vo. 1884	,,
Kőrősi (Joseph). Bulletin Annuel des Finances des Grandes Villes; 5ième année, 1881 . . . augmenté d'un Exposé comparatif et des Tableaux Synoptiques pour la période quinquennale de 1877 à 1881 . . . rédigé par—. 69 pp., la. 8vo. Budapest, 1883	,,
Martin (John B.). Seigneuriage and Mint Charges, 34 pp., 8vo. 1884	,,
Moreau (J.). L'Escaut. Amélioration de son Régime et rectification de son Cours. x + 41 pp., 8vo. Bruxelles, 1879	C. M. Kennedy, Esq., C.B.
Paul (Alexander). The History of Reform; a record of the Struggle for the Representation of the People in Parliament. viii + 248 pp., cloth, 12mo. 1884	The Cobden Club
Roth (H. Ling). On the Roots of the Sugar Cane. 3 pp., photographs, 8vo. Sydney, 1884	The Author
Smith (Adam). An Inquiry into the Nature and Causes of the Wealth of Nations, by—. With an Introductory Essay and Notes by Joseph S. Nicholson, M.A. 32 + 445 pp., cloth 8vo. 1884	Messrs. T. Nelson and Sons
Smith (George). Short History of Christian Missions from Abraham and Paul, to Carey, Livingstone, and Duff. xiv + 226 pp., cloth, 12mo. Edinburgh, 1884	The Author
Walker (Alexander). The Computator, being a Pocket Guide for the Commercial and Banker's Clerk. 42 pp., cloth 12mo. 1884	,,
Wolff (M. P.). Proposal for the Improved and Cheap Supply of Cooked Food to the Working Population, on a Self supporting Basis. A Lecture given by—. 31 pp., 8vo. 1883	,,
Woolston and Beeton (Messrs.). Statistical Chart of British Railways, 1883. Diagram I. Showing percentage of Gross Receipts, Net Revenue, and Ordinary Dividend to Paid up Capital, also the Amount of Capital in Millions. Diagram II. Showing proportion of Ordinary to Fixed Capital and proportion of Net Revenue appropriated to each. Diagram III. Showing Cost of Railway per Mile, and Amount of Ordinary Capital per Mile in thousands. Diagram IV. Showing the proportion of Passenger to Goods Traffic Receipts. Sheet	

Donations—Contd.

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Societies, &c.—	
British Association for the Advancement of Science. Report of the fifty-third meeting of the—, held at Southport, in September, 1883. lxxx + 700 + 103 pp., cloth, maps and plates, 8vo. 1884.	
(Contents of Section F—Economic Science and Statistics)—	
Address of the President of the Section, *R. H. Inglis Palgrave, Esq.;* The Cotton Trade: its Condition and Prospects, by *E. Guthrie;* An Attempt at the more Definite Statement of the Malthusian Principle, by *Rev. W. Cunningham;* On the Statistics of the Free Public Library, Notting Hill, by *J. Heywood, Esq.;* On the Evils arising from the Pollution of Rivers, by *Gen. Sir J. E. Alexander, K.C.B.;* On Free Libraries, by *Prof. L. Levi;* Canada, as it Impresses and Influences an Emigrant, with Notes on the North-West Territory, by *H. Moody;* A brief Chronological and Statistical Review of the Past and Present of Canada, by *C. Walford;* Recent Changes in the Distribution of Wealth in relation to the Incomes of the Labouring Classes, by *Prof. L. Levi;* On the Number of the Deaf and Dumb in the World, by *W. E. A. Axon;* On the Palestine Channel and Canal Scheme, by *C. Walford;* The English-Speaking Populations of the World, by *Hyde Clarke, Esq.;* Agricultural Statistics, by *W. Botly;* Foot and Mouth Disease of Cattle: its true History and Remedy, by *Rev. D. Ace, D.D.;* Report of the Anthropometric Committee on the Effect of Alcoholic Drinks on Length of Human Life, by *W. B. Robinson;* Forestry, by *W. Botly;* On the Introduction of Science into Higher and Middle-class Schools, by *D. Mackintosh;* The Importance of a Creed Census, with Notice of that taken in 1881 for the Diocese of Liverpool, by *Rev. Canon Hume;* The Growth of Barrow-in-Furness, &c., by *Hyde Clark, Esq.;* On the Increase of National Wealth since the time of the Stuarts, by *M. G. Mulhall;* Gold *versus* Goods, by *John B. Martin, Esq.;* Method of Measuring Changes in the Value of Gold, by *J. L. Shadwell;* The Scottish Poor Law, Past and Present, tried by results, by *E. A. Macknight;* Report of the Committee on the Workings of the Proposed Revised New Code, and of other Legislation affecting the Teaching of Science in Elementary Schools. A System of Science Demonstration in Elementary Schools, by *W. L. Carpenter;* On the Education of Artisans, by *G. B. Barron;* The True Reason why so many Children try to avoid School Attendance, by *Rev. Canon Hume;* The Education of Pauper Children, industrially and otherwise, by *Rev. J. O. Bevan;* Southport as an Example of Modern Enterprise, by *F. Norfolk*	The Association
British Iron Trade Association. Annual Statistical Report of the Secretary to the Members of the—, On the Home and Foreign Iron and Steel Industries in 1883. Cloth, 8vo. 1884	"

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Donations.	By whom Presented.
Societies, &c.—*Contd.*	
East India Association. Journal of the—. Vol. xvi, Nos. 2 and 3. 8vo. 1884	The Association
Free Public Libraries. Annual Reports of various—, in Great Britain	J. R. Carter, Esq.
Glasgow Technical College— The Promotion of Technical Education in Glasgow. 8vo. Glasgow, 1880	C. M. Kennedy, Esq., C.B.
Weaving Branch. Fourth Annual Report, 1879-80	
Howard Association. 8vo.— Report, October, 1883	The Association
The Supervision of Pauper and Friendless Children	
Observations on the Reformatory and Industrial Schools' Acts, by Charles Wilson	
Institute of Bankers. Journal of the—. Vol. v, Nos. 1—5	The Institute
Institution of Civil Engineers— Minutes of Proceedings of the—, with other Selected and Abstracted Papers. Vol. lxxv. Part I, 1883-84. Cloth, plates, plans, &c. 1884	The Institution
The Practical Applications of Electricity. A series of Lectures delivered at the—, Session 1882-83. iv + 181 pp., cloth, map, and plates, 8vo. 1884	
Liberty and Property Defence League. Over-legislation in 1884. Review of the Bills of the Session by the Parliamentary Committee of the—. 8vo. 1884	The League
Manchester Literary and Philosophical Society— Memoirs of the—. Third series. Vol. vii. Cloth, plates. 1882. Vol. ix. [For the Hundredth Year of the Literary and Philosophical Society of Manchester (1881).] A Centenary of Science in Manchester (in a Series of Notes), by R. Angus Smith, F.R.S. xii + 475 pp., cloth, 8vo. 1883	The Society
Proceedings of the—. Vols. xx (1880-81); xxi (1881-82); xxii (1882-83)	
Manchester Statistical Society. Transactions of the—. Session 1882-83, and Index. 1883	"
Mechanical Engineers. Institution of—. Proceedings. No. 4, 1883. No. 1, 1884. Plates	The Institution
Middlesex Hospital. Reports of the Medical, Surgical, and Pathological Registrars for the year 1881. 8vo. 1884	The Hospital
National Association for the Promotion of Social Science. Transactions of the—, Huddersfield Meeting, 1883. xl + 679 pp., cloth, 8vo. 1884 (Contents of Section IV. Economy and Trade.)	The Association
Address of the President of the Section on Economy and Trade, by *J. E. T. Rogers, Esq.*, M.P.; What should be the Functions and Powers of Local Authorities under any Scheme of Government by County Boards? by *John Newton;* Are the Provinces interested, and if so, to what extent, in the Trust Funds of the City of London Guilds? by *H. C. Richards* and *J. Roland Phillips;* What is the True Measure of the alleged Appreciation of Gold? by *W. Westgarth* and *N. Cork;* On the Fish Supply of the	

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Donations.	By whom Presented.
Societies, &c.—*Contd.*	
United Kingdom, by *W. M. Adams;* How far is it practicable or desirable to bring Inland Manufacturing Towns into direct Communication with the Sea through the medium of Rivers and Canals, with special reference to the Manchester Ship Canal? by *B. T. Leech;* Upon the Decline of the early Principles and Practice of Co-operation, by *J. Holmes;* The Progress of British Commerce, by *E. J. Watherston;* The Effect of National Compulsory Insurance on existing sound Friendly Societies, by *Rev. W. L. Blackley;* Practical Remarks upon the Bankruptcy Act, 1883, by *R. Sedgwick;* On Harbours of Refuge, by *E. C. Thomas;* The Girls' Friendly Society, by *The Hon. Lady Grey;* The Every-day Handy Brigade, by *C. J. Rowe;* Financial Reform, by *G. R. Haywood;* Taxation of Gold and Silver Plate, by *C. M. Smith;* Practical Objections to the System of Compulsory Hall-marking of Gold and Silver Wares, by *E. J. Watherston;* On a Proposed International Institution to Diminish Casualties at Sea, by *His Excell. Don A. de Marcoartu*	The Association
National Conference of Friends of Lord's Day Observance . . . convened by the Committee of the Society for Promoting the due Observance of the Lord's Day. Report of Proceedings. 196 pp., 8vo. 1884	The Lord's-Day Observance Society
Royal Agricultural Society of England. Journal of the—. Second series. Vol. xx, Part I, No. 39. Illustrations, 8vo. 1884	The Society
Royal Asiatic Society of Great Britain and Ireland—	
Journal of the—. New Series. Vol. xvi, Part II, Map, 1884	,,
Bombay Branch. Journal of the—. No. 42, vol. xvi. Plates, &c., 1883	
China Branch. Report of the Council for the year 1882. Journal. New Series. Vol xvii, Part II....	
Royal Geographical Society. Proceedings of the—. Nos. 1—5, 1884	,,
Royal Institution of Great Britain—	
Proceedings of the—. Vol. x, Part II, No. 76. Plates, 8vo. 1883	The Institution
Additions to the Second Volume of the Catalogue of the Library of the—. 19 pp., 8vo.	
Royal Medical and Chirurgical Society of London. Proceedings of the—. New series. Vol. i, No. 4. 8vo. 1883. Also Index to vol. ix. 8vo. 1882	The Society
Royal Society. Proceedings of the—. Vol. xxxv, No. 227; vol. xxxvi, Nos. 228—230.....	,,
Royal United Service Institution. Journal of the—. Vol. xxvii, No. 122. Vol. xxviii, No. 123. Plates, 8vo. 1883-84	The Institution
Society for Bettering the Condition of the Poor. Of the Education of the Poor; being the first part of a Digest of the Reports of the—, and containing a Selection of those Articles which have a reference to Education. 376 pp., boards, 8vo. 1809	Thomas Beggs, Esq.

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Societies, &c.—*Contd.*	
Surveyors. Transactions of the Institution of—. Vol. xvi, Nos. 3—12	The Society
Sydenham Society. Annals of Influenza or Epidemic Catarrhal Fever in Great Britain from 1510 to 1837. Prepared and edited by Theophilus Thompson, M.D., F.R.S. xvi + 400 pp., cloth, 8vo. 1852	Thomas Beggs, Esq.
United Kingdom Alliance. Twenty-eighth to thirty-first Reports of the Executive Committee of the—, 1879-80 to 1882-83. 4 Nos. 8vo. Manchester	J. R. Carter, Esq.
Wigan. Borough of—, Free Public Library. Sixth Annual Report of the Librarian for 1884. 8vo. 1884	
Periodicals—	
Arts, Journal of the Society of— ... Current numbers	The Editor
Athenæum, The ... „	„
Bankers' Magazine (London), The ... „	„
British Trade Journal. Vol. xxii, No. 253, 1st January, 1884. Illustrations, 4to.	„
Building Societies and Land Companies' Gazette, The ... Current numbers	„
Capital and Labour ... „	„
Commercial World, The ... „	„
Economist, The ... „	„
Electricians' Directory, with Handbook, for 1884. (Second year of publication.) 8vo. 1884	W. H. Parker, Esq.
Finance Chronicle. Current numbers ...	The Editor
Financial Reform Almanac for 1866-72. 7 parts, la. 8vo. Liverpool	G. Howell, Esq.
Financial Reform Almanac for 1884. A Vade Mecum for Fiscal Reformers . . . La. 8vo.	Cobden Club
Insurance Gazette, The ... Current numbers	The Editor
„ Post ... „	„
„ Record, The ... „	„
Investors' Monthly Manual, The ... „	„
„ vol. i, Nos. 7—15. Folio 1865	T. Y. Strachan, Esq.
Iron and Coal Trades' Review, The ... Current numbers	The Editor
Machinery Market, The ... „	„
Money ... „	„
Nature ... „	„
Policy-Holder Journal ... „	„
Review, The ... „	„
Sanitary Record, The ... „	„
Scandinavia ... „	„
Statist, The ... „	„
Temple Bar. Vol. lxx, No. 278, 1884 —	„
Wool and Textiles Fabrics ... Current numbers	„

JOURNAL OF THE STATISTICAL SOCIETY,

SEPTEMBER, 1884.

REPORT *of the* COUNCIL *for the* FINANCIAL YEAR *ended* 31*st December*, 1883, *and for the* SESSIONAL YEAR *ending* 24*th June*, 1884, *presented at the* FIFTIETH ANNIVERSARY MEETING *of the* STATISTICAL SOCIETY, *held at the Society's Rooms, Somerset House Terrace (King's College Entrance), Strand London, on the* 24*th of June*, 1884.

The PRESIDENT, ROBERT GIFFEN, ESQ., LL.D., *in the Chair.*

THE circular convening the meeting having been read, and the minutes of the last meeting read and confirmed, the following report was read:—

Report of the Council.

The Council have the honour to submit their fiftieth annual report.

The results compare as follows with the average of the previous ten years:—

Particulars.	1883.	Average for the Previous Ten Years.
Number of Fellows on 31st December	860	694
Life Members included in the above	139	106
Number lost by death, withdrawal or default	41	44
New Fellows elected	115	77

Since the 1st of January last, thirty-eight new Fellows have been elected.

The financial condition of the Society continues to be satisfactory. The following table gives, for purposes of comparison, the different sources of ordinary income for the year 1883, together with the same particulars for the previous five years :—

Receipts per	1883.	1882.	1881.	1880.	1879.	1878.	Average for the Five Years previous to 1883.
	£	£	£	£	£	£	£
Dividends	102	94	88	75	65	55	75
Annual Subscriptions....	1,361	1,291	1,306	1,317	1,300	1,197	1,282
Compositions	126	189	84	273	126	294	193
Journal sales	150	227	145	202	176	169	184
Advertisements in Journal	35	37	26	30	31	17	29
Furniture, &c., account	4	—	—	—	—	—	—
	1,778	1,838	1,649	1,902	1,698	1,732	1,763

The investments of the Society at the present time amount to 3,500*l.* of New Three per Cents.

A comparison of the principal figures at intervals of ten years in the following table, will show the progress of the Society from an early date :—

Comparison of Condition of Society at Intervals of Ten Years, on 31st December.

Year.	Number of Fellows.	Ordinary Income.	Expenditure.	Amount Invested.	Liabilities.	Assets over Liabilities.
		£	£	£	£	£
1843	428	932	901	867	150	1,003
'53	371	918	924	867	135	855
'63	357	766	669	867	150	1,768
'73	530	1,248	1,097	1,507	135	2,508
'83	860	1,778	1,635	3,500	347	5,246

The following table gives the particulars for each year of the last decade :—

Year.	Number of Fellows.	Income.	Expenditure.	Amount Invested.	Liabilities.	Assets over Liabilities.	Year.
		£	£	£	£	£	
1874	588	1,377	1,491*	1,507	460	2,819	1874
'75	607	1,231	1,733*	1,207	216	2,351	'75
'76	611	1,438	1,340*	1,207	187	3,464	'76
'77	683	1,597	1,286	1,398	201	3,763	'77
'78	746	1,732	1,345	1,902	168	4,147	'78
'79 ...	783	1,698	1,427	2,283	238	4,433	'79
'80	808	1,902	1,517†	2,572	214	4,614	'80
'81	807	1,649	1,400	2,869	192	4,935	'81
'82	786	1,838	1,581‡	3,071	203	5,240	'82
'83	860	1,778	1,635‡	3,500	347	5,246	'83

* The expenditure of these years was affected by the heavy expenses incident to moving into new premises.

† The expenditure of this year was affected by the expenses attending the alteration and redecoration of the meeting room.

‡ The expenditure of these years was affected by the expenses attending the preparation of a new catalogue to the library.

The decennial averages of the annual sales of the Society's *Journal* are as follows:—

	£
For the ten years 1841-50	56
,, '51-60	83
,, '61-70	97
,, '71-80	155
For the last three years '81-83	174

The Opening Address of the President was given on the re-assembling of the Society in November, and the papers read and the members elected at each of the monthly meetings were as follows:—

Session 1883-84.

First Ordinary Meeting, Tuesday, 20th November, 1883.

The President, Robert Giffen, Esq., LL.D., in the Chair.

The following were elected Fellows:—

G. Aschenheim.
James Horace Beckingham.
Francis Bennoch, F.S.A.
W. Binney.
Henry Birchenough.
R. H. Blades.
William Blades.
John Bovey.
Frederick Braby, F.C.S., F.G.S.
Francis Briesemann.
Thomas Brindle.
Harrington Evans Broad.
C. B. Brooke.
W. J. Bush.
J. J. Cater.
Richard Cattarns.
Walter Childs.
John S. Collmann.
M. Corgialegno.
Frederick William Cosens.
W. B. Cranwell.
J. Lewis Crew.
Thomas Cullen.
Alderman P. De Keyser.
Charles Eley.
Sir John Whitaker Ellis, Bart.
George J. Fraser.
Jacob S. Gates.
Josiah Griffin.
Thomas Wrigley Grimshaw, M.D., M.A.
Charles Gunther.
Henry Thomas Hadrill.
Sir John Hall, K.C.M.G.
James Thomas Hamilton.
Robert B. Hansell.
G. P. Harding.
William H. Hardy, F.C.A.
Robert Phillip Heilgers.
George Howell.
E. C. P. Hull.
Benjamin Jenkins.
Thomas Johnston.
Samuel S. Joseph.
Bolton King, B.A.
Isaac Saunders Leadam, M.A.
H. B. McCabe.
R. D. Barkly Macqueen.
Frederick C. Matheison.
George W. Medley.
George Moffatt.
James Henry Morgan.
Kenric B. Murray.
Charles Palmer.
Professor J. H. Poynting, M.A.
His Highness Rama Varma Bahadoor, G.C.S.I.
Edward Wahab.
John Edward Walford, C.C.
William E. Whadcoat.

The President delivered an Inaugural Address, on "The "Progress of the Working Classes in the Last Half Century," and presented the "Howard Medal" of 1883 (with 20*l.*) to

R. D. R. Sweeting, Esq., M.R.C.S., B.A., &c.

for his Essay on:—

"The Experiences and Opinions of John Howard on the "Preservation and Improvement of the Health of the Inmates of "Schools, Prisons, Workhouses, Hospitals, and other Public "Institutions, as far as Health is affected by Structural Arrange- "ments relating to Supplies of Air and Water, Drainage, &c."

Second Ordinary Meeting, Tuesday, 18th December, 1883.

The President, ROBERT GIFFEN, Esq., LL.D., in the Chair.

The following were elected Fellows:—

Frederick Day Askey.
W. Harrison Last.
Charles Henry Lawson.
The Hon. Rao Saheb V. N. Mandlik, C.S.I.
H. J. Muirhead.
J. Ernest Walter Norfolk.
John Paterson.
Frederick William Petheram.
J. O. Phillips.
James Platt.
William Agnew Pope.
Ferdinand Quoadt.
Richard Rabbidge.
John Grafton Ross.
John Frederick Schwann.
Alexander Sclanders.
Isaac Seligman.
Richard Stevens Sly.
C. Ridley Smith.
Albert Spicer.
Harry Taylor.
Alexander Brown Thorburn.
Norman P. M. Trouson.
J. Van Essen.
William Livingstone Watson.
Thomas Percival Wood.
Bryce McMurdo Wright.

Professor Leone Levi, LL.D., &c., read a Paper on "Statistics "of the Revenue of the United Kingdom from 1859-82, in Rela- "tion to the Distribution of Taxation (in continuation of a Paper "read in 1860)."

Third Ordinary Meeting, Tuesday, 15th January, 1884.

SIR R. W. RAWSON, K.C.M.G., C.B., a Vice-President, in the Chair.

The following were elected Fellows:—

Edward James Anning.
John James Cockshott.
J. Henry B. De Jouy.
J. Frank Dethridge.
Archibald Joseph Dunn.
T. R. Griffiths.
Charles Loyd Norman.
J. T. Palmer.
John Polson.
Francis Ravenscroft.
E. W. Richards.
Thomas Sutherland.
R. D. R. Sweeting, M.R.C.S., B.A.,&c.
Frederick George Whibley.

Professor J. H. Poynting, M.A., read a Paper, "A Comparison "of the Fluctuations in the Price of Wheat and in the Cotton and "Silk Imports into Great Britain."

Fourth Ordinary Meeting, Tuesday, 19th February, 1884.

The President, ROBERT GIFFEN, Esq., LL.D., in the Chair.

The following were elected Fellows:—

William Henry Barlow, F.R.S., C.E.
W. Leigh Bernard.
Robert Clark.
George Francis Hardy, F.I.A.
W. E. Herbert.
John Augustus Josolyne, F.I.C.A., F.S.A., &c.
Richard Laishley, jun.
William Edward Lines.
Frederick W. Manson.
Francis Peek.
The Hon. Michael Solomon.

Mr. John B. Martin, M.A., read a Paper on "Electoral "Statistics: a Review of the Working of our Representative

" System from 1832 to 1881, in view of Prospective Changes " therein."

Fifth Ordinary Meeting, Tuesday, 18th March, 1884.

The President, ROBERT GIFFEN, Esq., LL.D., in the Chair.

The following were elected Fellows:—

Lord Edmund G. Fitzmaurice, M.P. | C. M. Kennedy, C.B.
Adolph Hartel. | William Proctor.
Thomas W. Tempany, F.R.H.S.

Dr. G. B. Longstaff read a Paper on " The Recent Decline in " the English Death-rate, considered in connection with the Causes " of Death."

Sixth Ordinary Meeting, Tuesday, 22nd April, 1884.

The President, ROBERT GIFFEN, Esq., LL.D., in the Chair.

The following were elected Fellows:—

John Peter Hamilton Boileau, M.D., &c. | Gerald Hemmington Ryan, F.I.A.

Lieut. H. B. Willock, R.E., read a Paper on " English Express " Trains in 1871, and a Comparison between them and those of " 1883."

Seventh Ordinary Meeting, Tuesday, 20th May, 1884.

ROBERT LAWSON, Esq., a Vice-President, in the Chair.

The undermentioned was elected a Fellow:—

Clarmont John Daniell.

Mr. C. Walford read a Paper entitled " A Statistical Review " of Canada, including its Confederated Provinces."

Eighth Ordinary Meeting, Tuesday, 17th June, 1884.

SIR R. W. RAWSON, K.C.M.G., C.B., a Vice-President, in the Chair.

The following were elected Fellows:—

Richard Bentley, F.R.G.S. | James Arbuckle Findlay.
John Robert Breckon. | Thomas Rigbye Glover.
John Danvers Power.

Mr. J. B. Martin read a Paper on " Some Egyptian Statistics," by Joseph Rabino, Esq.

The Council have much satisfaction in recording that the slight falling off in the number of members of the Society in

1882 has been more than made good in 1883, and that the total of the muster-roll, 860, is 52 in excess of any number previously recorded. This result is in a great measure due to the accession of a number of members of the London Chamber of Commerce, a body for whom economic and statistical research must naturally have great interest. It may not be inappropriate on the fiftieth anniversary of the Council's report to submit the following tabular statement of the seniority in membership of the present Fellows of the Society, thus :—

Original members*		=	6
Elected	1834 to 1840	=	11
„	'41 „ '50	=	17
„	'51 „ '60	=	50
„	'61 „ '70	=	81
„	'71 „ '80	=	498
„	'81 „ '84	=	197
			860

Notwithstanding this satisfactory increase of strength, the Council must still express their earnest hope that the increasing recognition of the importance of statistical research may find its natural expression in a corresponding increase in the number of Fellows of the Society, and they strongly urge on all existing Fellows the importance of using every effort to increase both the numbers and the efficiency of the Society.

The tabulated comparison of the sources of income in 1883, as compared with previous years, shows an increase in annual subscriptions almost balanced by a decrease in compositions; an increase in dividends; and a decrease in *Journal* sales: this last item is due both to the fact that the *Journal* sales reported in 1882-83 extended over a period of thirteen months as against eleven months only in 1883-84, and also to the falling off in the demand for the number containing the President's Inaugural Address, in consequence of the publication of the latter in a popular form. It is to be hoped that the advantage that has thus accrued to the public at the expense of the Society may be made good indirectly hereafter; and the Council have no reason to fear that the interest or value of the *Journal* has in any way fallen off. In addition to the presidential address, valuable papers have been contributed to the Society during the past Session; those of Professor Leone Levi, Lieutenant Willock, R.E., and Dr. Longstaff, carried on the course of previous inquiries; Professor Poynting's paper called attention to the scientific method of averaging; and

* Edwin Chadwick, Esq., C.B.; the Right Hon. Viscount Eversley, D.C.L., LL.D.; James Heywood, Esq., F.R.S.; William B. Hodge, Esq., F.I.A.; the Right Hon. the Earl of Lovelace, F.R.S.; David Ross, Esq., of Bladensburg.

those of Mr. Walford, Mr. Rabino, and Mr. John B. Martin were on subjects of great contemporary interest.

Dr. Barry, late Principal of King's College, having been appointed to the Bishopric of Sydney, the Committee of King's College, in electing his successor, decided that in future the Principal should reside on the premises; and notice was, in consequence, given to the Society to determine their tenure of the quarters they have occupied since 1874. This notice would have expired in February; but in consideration of the great inconvenience to which the Society would have been put had a change of residence been necessary during the currency of a particularly busy session, negotiations were entered into, and successfully carried out, whereby the term of occupancy has been extended to the end of June. The Council are of opinion that the thanks of the Society are due to the Committee of King's College for their action in this matter.

These negotiations, and the consequent necessity of finding quarters elsewhere, necessitated the revival of the House Accommodation Committee, who inspected a great number of buildings, and found the utmost difficulty in finding any suitable for the purposes of the Society, either separately or, as hitherto, in conjunction with the Institute of Actuaries. An opportunity occurred during this inquiry of acquiring the lease for fourteen years of No. 9, Adelphi Terrace; and the Committee having reported the premises to be the most suitable that they had met with, the lease has been acquired, at a premium of 500*l.* The Council are pleased to be able to report that this change of premises will cause no interruption of the friendly relations that have hitherto existed between the Society, the Institute of Actuaries, and the Institute of Chemistry.

The change of premises will inevitably cause a considerable increase in the future annual expenditure under the head of rent, &c.; but it must be borne in mind that in the past the Society has been lodged at a cost much under the market value of the accommodation enjoyed.

Through the courtesy of the Education Department the ordinary meetings of the Society have been held as last year at the School of Mines, Jermyn Street. The Council are of opinion that the thanks of the Society are due to the Vice-President of the Department, the Right Hon. A. J. Mundella, M.P., for the accommodation thus placed at its disposal.

The Library Committee has been engaged on a work of much labour and responsibility in the completion of the Catalogue that had been begun at the period of the last annual report. The embodiment in the Catalogue of a nominal index to the *Journal* of the Society, as well as to the Newmarch collection, added

greatly to the bulk of the work, the number of slips reaching 37,500. The Council regret that from these and other causes the preliminary expenses have exceeded their estimate, and the cost of printing will also be much enhanced. They hope, however, that in the possession of a really good catalogue and index to the very valuable Library owned by the Society, an equivalent will be found for the money spent in its preparation; and they consider that no better use could be made of some portion of the accumulated funds of the Society.

The Catalogue will shortly be ready for issue; and it is hoped that the publication of the Index, without which the Catalogue can scarcely be said to be complete, will be found to be practicable at an early date.

During the year a specially appointed *Journal* Committee, consisting of Sir R. W. Rawson; Mr. W. Hooper; Mr. S. Bourne; Mr. Hyde Clarke ; Sir James Caird; Professor Leone Levi; Major P. G. Craigie; Mr. F. G. P. Neison, and the Executive Committee, has also been sitting, with a view of determining whether any and if so what change should be made in the form and period of publication of the *Journal*. There are strong arguments in favour of a monthly, as against a quarterly publication; but in view of the disorganisation entailed by a change of premises and other considerations, it has been deemed expedient to continue the *Journal* as hitherto in a quarterly form for another year. In the meanwhile estimates have been obtained and considered for publishing it monthly during the period of session.

The Jubilee Committee, whose appointment was referred to in the last annual report, met formally in February, when a suggestion was made that the holding of the International Health Exhibition at South Kensington, under the presidency of the Prince of Wales, afforded an opportunity for securing the co-operation of H.R H. our Honorary President in some form of celebration that might make it possible for him to further simultaneously the interests of both. Some preliminary steps were taken in this direction, and the Jubilee Committee was enlarged to one consisting of 133 of the most eminent members of the Society; but the lamented death of H.R.H. The Duke of Albany impeded the execution of this design, and the time being too short for other arrangements to be made, the Jubilee Committee has reported in favour of postponing the celebration to the month of June, 1885. It may be mentioned that the Society completed the fiftieth year of its existence on the 15th of March last.

Competitive essays have been invited by advertisement for Mr. Pochin's special gift of 100*l.* for the best essay on the subject:—

"On the extent to which recent legislation is in accordance "with, or deviates from, the true principles of Economic Science; "and showing the permanent effects which may be expected to "arise from such legislation,"

and six essays have been received: the Committee appointed to adjudicate on the essays has not yet made its report.

It has been determined by the Council, after very full consideration, that the Howard Medal competition shall remain in suspense during the present year; and that in selecting the subject of essays in future their scope may reasonably be enlarged; that recognition is due to the labours of those who have followed in the footsteps of John Howard; and that this course can be taken without dissociating his name from the medal hitherto bestowed on essays directly illustrative of his life and works.

The Society was well represented by its Fellows at the meeting of the British Association at Southport in September, 1883, when Mr. R. H. Inglis Palgrave presided over the Statistical and Economic Section (F). Papers were read, among others, by the Rev. D. Ace, Mr. W. Botly, Mr. Hyde Clarke, the Rev. Wm. Cunningham, Mr. James Heywood, F.R.S., Professor Leone Levi, Mr. John B. Martin, Mr. M. G. Mulhall, and Mr. Cornelius Walford. The Society was also well represented at the meeting of the National Association for the promotion of Social Science at Huddersfield in October, where papers were contributed by Sir Richard Temple, G.C.S.I., President; Mr. Nathaniel Cork, Mr. Rowland Hamilton, Mr. Francis S. Powell, Mr. William Westgarth, and Mr. John Yeats, LL.D.

The Society has to lament the deaths of the following members of the Society:—

Fellows.

Dr. L. Borchardt.
H. R. Droop.
Spencer Herapath.
Right Hon. Hugh Law.
(*c*) Right Hon. Lord Overstone. (*Original Member.*)
Sir G. R. Phillips, Bart.
Edmund Potter, F.R.S.
Charles Schreiber, M.P.
Sir E. H. Scott, Bart.
Mihill Slaughter.
General Pringle Taylor, K.H.
C. Baring Young.

Honorary Member.

M. Edward Scheutz, of Stockholm.

(*c*) Indicates those who on one or more occasions had served on the Council.

In submitting the following list of Fellows proposed as President, Council, and Officers of the Society for the Session 1884-85 for the consideration of the meeting, the Council have to express their great regret at losing the services of Mr. Hammond Chubb as one of their Honorary Secretaries.

Council and Officers for 1884-85.

PRESIDENT.

SIR RAWSON W. RAWSON, K.C.M.G., C.B.

COUNCIL.

George S. Baden-Powell, M.A., C.M.G.
Arthur H. Bailey, F.I.A.
T. Graham Balfour, M.D., F.R.S.
Alfred Edmund Bateman.
Stephen Bourne.
J. Oldfield Chadwick, F.R.G.S.
Hammond Chubb, B.A.
Hyde Clarke.
Major Patrick George Craigie.
Professor H. S. Foxwell, M.A.
Rowland Hamilton.
Frederick Hendriks.
Noel A. Humphreys.
*James Stephen Jeans.
Robert Lawson.
Professor Leone Levi, LL.D.
*George Blundel Longstaff, M.A., M.B.
*A. Marshall, M.A.
John Biddulph Martin, M.A.
Richard Biddulph Martin, M.P.
*Frederic John Mouat, M.D., F.R.C.S.
Francis G. P. Neison.
Evan C. Nepean.
*Robert Harry Inglis Palgrave, J.P., F.R.S.
Henry Davis Pochin.
*Ernest George Ravenstein, F.R.G.S.
Sir W. Rose Robinson, K.C.S.I.
*Samuel Smith, M.P.
Richard Denny Urlin.
R. Price Williams, C.E.

Those marked * are new Members of Council.

TREASURER.

Richard Biddulph Martin, M.P.

SECRETARIES.

John B. Martin, M.A. | A. E. Bateman.
G. S. Baden-Powell, M.A., C.M.G.

FOREIGN SECRETARY.

John Biddulph Martin, M.A.

The abstract of receipts and payments, and the balance sheet of assets and liabilities on 31st December, 1883, are subjoined, together with the report of the Auditors on the accounts for the year 1883:—

(I.)—Abstract *of* Receipts *and* Payments *for the* Year *ending* 31*st* December, 1883.

RECEIPTS.	£	s.	d.	PAYMENTS.	£	s.	d.
Balance in Bank, 31st December, 1882 ... £264 4 3				Rent ..... £200 – –			
Balance of Petty Cash. 23 17 –				Less sublet ..... 120 – –			
	288	1	3		80	–	–
				Salaries, Wages, and Pension	509	2	6
Dividends on 3,500*l.* New 3 per Cents	102	9	9	*Journal*, Printing £542 11 3			
				„ Annual Index 5 5 –			
Subscriptions received:—				„ Shorthand Reporters 19 13 –			
				„ Literary Services 17 17 –			
43 Arrears ..... £90 6 –					585	6	3
561 for the year 1883..... 1,178 2 –				Advertising	70	18	2
44 in Advance ..... 92 8 –				Ordinary Meeting Expenses	31	16	7
	1,360	16	–	Library	49	5	–
648				Stationery and Sundry Printing ...	76	5	8
				Postage and delivery of Journals...	74	8	11
6 Compositions	126	–	–	Fire and Lights	76	13	6
Journal Sales	150	4	6	Incidental Expenses	60	14	–
Advertisements in Journal	35	8	9	Howard Medal	20	–	–
Furniture and Repairs Account ...	3	8	9		1,634	10	7
				Purchase of 300*l.* New 3 per Cents	308	5	–
					£1,942	15	7
				Balance at Drummond's ..... 116 16 –			
				Balance of Petty Cash 6 17 5			
					123	13	5
Total	£2,066	9	–	Total	£2,066	9	–

(Signed) "J. O. Chadwick,
"G. Harvey Simmonds,
"J. Whitcher,
} *Auditors.*"

(II.)—Balance Sheet *of* Assets *and* Liabilities, *on* 31*st* December, 1883.

LIABILITIES.	£	s.	d.	£	s.	d.
Per Accounts for—						
December number of the *Journal* ...	139	1	–			
Annual Index	5	5	–			
Miscellaneous printing	15	13	6			
Stationery, &c.	17	16	2			
Mitchell and Sons, for Binding Books	15	8	5			
Advertisement Accounts	37	17	10			
Miscellaneous (as per List).....	23	7	3			
				254	9	2
44 Annual Subscriptions received in advance				92	8	–
				346	17	2
Balance in favour of the Society...				5,246	6	2
				£5,593	3	4

ASSETS.	£	s.	d.
Cash Balances	123	13	5
3,500*l.* New 3 per Cents, cost	3,379	3	11
Property: Estimated Value of, viz.—			
Books in Library £1,000			
Journals in Stock 500			
Furniture and Fixtures 500			
	2,000	–	–
Arrears of Subscriptions recoverable (say)	90	6	–
	£5,593	3	4

(III.)—Building Fund (Established 10*th July*, 1873), Balance Sheet, *on* 31*st* December, 1883.

LIABILITIES.	£	s.	d.
Amount of Fund Invested from last Account	180	7	8
Dividends Received during 1883 ...	6	1	7
	£186	9	3

ASSETS.	£	s.	d.
Invested as per last Account in Metropolitan Consolidated 3½ per Cent. Stock, in the name of the Treasurer, R. B. Martin, Esq., M.P.—			
£175 16 2 cost	180	7	8
Purchased during the year..... 5 10 3 „	6	1	7
£181 6 5	£186	9	3

(Signed) "J. O. Chadwick,
"G. Harvey Simmonds,
"J. Whitcher,
Auditors."

"REPORT OF THE AUDITORS FOR 1883.

"STATISTICAL SOCIETY,

"11*th February*, 1884.

"*The Auditors appointed to examine the Treasurer's Accounts of the Society for the Year* 1883,

"REPORT:—

"*That they have compared the Entries in the Books with the several Vouchers for the same, from the* 1*st January to the* 31*st December*, 1883, *and find them correct, showing the Receipts* (*including a Balance of* 288*l.* 1*s.* 3*d. from* 1882) *to have been* 2,066*l.* 9*s.* –*d.*, *and the Payments* (*including the purchase of* 300*l. New Three per Cents*) 1,942*l.* 15*s.* 7*d.*, *leaving a Balance in favour of the Society of* 123*l.* 13*s.* 5*d. at* 31*st December*, 1883.

"*They have also had laid before them an Estimate of the Assets and Liabilities of the Society at the same date, the former amounting to* 5,593*l.* 3*s.* 4*d.*, *and the latter to* 346*l.* 17*s.* 2*d.*, *leaving a Balance in favour of the Society of* 5,246*l.* 6*s.* 2*d.*

"*The amount standing to the credit of the Building Fund at the end of the year* 1883, *was* 186*l.* 9*s.* 3*d.*, *invested in Metropolitan Three and a Half per Cent. Stock, in the name of the Treasurer, R. B. Martin, Esq., M.P.*

"*They further find that at the end of the year* 1882 *the number of Fellows on the list was* 786, *which number was diminished in the course of the year to the extent of* 41, *by Deaths, Resignations, and Defaulters, and that* 113 *new Members were elected, and the Resignations of two Fellows were cancelled, leaving on the list on the* 31*st December*, 1883, 860 *Fellows of the Society.*

(Signed) "J. O. CHADWICK,
"G. HARVEY SIMMONDS,
"J. WHITCHER,
} *Auditors.*"

Proceedings *of the* Fiftieth Anniversary Meeting.

The President said it was his duty to move "that the Report of the Council, the Abstract of Receipts and Payments, the Balance Sheet of Assets and Liabilities, and the Report of the Auditors for 1883, be adopted, entered on the minutes, and printed in the *Journal*." In doing so he had very little to add to the report which the Secretary had read. It seemed to him that the report was most admirably drawn up, and contained all the important matters which had happened during the session; and consequently there was very little to be said on all those points. His remarks would therefore be very few. First, with reference to the increase of the membership of the Society. Last year in the report they had to lament, for almost the first time for many years, that there was some falling off in members: that they had not increased as compared with the corresponding period of the previous year. The Council pointed out that this was not likely to be a permanent state of things; that the fluctuation was unusual, and that nothing had happened to affect the general causes of the advancement of the Society. The result of the past year had completely proved that statement, because, as compared with the previous year, they had now an increase of 54 members, thus far more than making good the loss which had occurred in the previous year. Looking back some time in the history of the Society, the increase he thought was very satisfactory indeed. As compared with a period twenty years ago, their numbers had far more than doubled. If they looked at the table at the foot of the second page of the report, they would find that twenty years ago (in 1863) the number of members of the Society was 357. At the end of 1883 the number of members was 860; the number at the present time being still about 860. Consequently their numbers had far more than doubled in twenty years. He might also point out that the greater part of that increase was in the last ten years. Looking at the figures for 1873, it would be found that the increase between 1863 and 1873 was about 170, while the increase between 1873 and 1883 was 330; so that both in the amount of the increase and the fact of its having taken place in recent years, they had every cause to be satisfied with the progress of the Society. There was a corresponding increase in the income of the Society, which was very satisfactory. He was sorry to observe in one respect that in the last year or two that increase in the income of the Society had not been attended with a corresponding increase of the assets of the Society. The expenditure during the last two years had been exceptionally heavy. It was very important, however, to notice that this exceptionally heavy expenditure was chiefly due to expenditure in connection with the library, one of the most useful things which the Society provided for the public; and it was to be hoped that now that the catalogue of the library was advanced as it was

and could be made use of by the members, they would have more funds to devote to other purposes. The next point he wished to notice was with reference to the papers which had been delivered during the session. Those who had had the good fortune to be present at the reading of those papers, or who read them in the *Journal*, must agree that in no respect had there been any falling off in the character of the papers produced at their meetings. As the production of these papers was one of the main objects for which the Society existed, surely that was one of the most satisfactory evidences that they had been successful in their work. He did not wish to name particular papers with a view to select them; but he should like especially to call attention to Mr. Poynting's paper as one of a kind that it was most desirable for the Society to encourage, being an attempt to deal in a scientific manner with many of the questions of prices which occupied their attention from time to time, an attempt to do so from the scientific side of things and by a gentleman connected with the universities who devoted themselves to scientific studies. He believed it was very important for them that they should encourage this connection with the universities, and he hoped they should have more papers of that kind, dealing in a similar way with scientific questions. Dr. Longstaff's paper was also a very important one, as really bringing to a focus a great deal of information with regard to death-rates which had been accumulating in the offices of the registrar-general for a long time past. The other papers—Mr. Levi's on the Statistics of the Revenue of the United Kingdom, Mr. Walford's Statistical Review of Canada, and Mr. Rabino's Some Egyptian Statistics—were all papers of an economic kind, and were calculated to maintain the reputation of the Society for dealing with economic subjects. Mr. Martin's paper dealt more with political statistics than with either mortality statistics or economical statistics. The paper had been objected to by some people as dealing with a subject which was not a proper subject for discussion in the Society; but he thought they would all agree that the paper was a very useful one, and a very proper subject for discussion by the members. Mr. Willock's paper on Express Trains introduced to the Society and to the world an entirely new subject, most admirable for the way in which it was treated. Altogether he thought that the papers during the past session had fully maintained the reputation of the Society, and that they had every cause to be satisfied with the work they had done and with their discussions. Those were perhaps the main topics which were dealt with in the report. It was a matter of minor interest, still very important in its own way, that they had effected the change of rooms occupied by the Society. That was the last occasion on which the Society would meet in the rooms they now occupied. The thanks of the Society were due to the Council and office bearers for the labour they had taken in procuring new offices; and it was a matter of satisfaction that they had got the new premises under a lease of fourteen years, and would no longer be liable to be turned out at a few months' notice, which had been the difficulty of their tenure for some time past.

Neither the Journal Committee nor the Jubilee Committee had concluded their labours; but he thought from the statements with respect to the *Journal* it seemed very likely some good was still to be done by those Committees. With regard to the jubilee, the unfortunate circumstances which had prevented its being held this year might perhaps result in the end in advantage to the Society. Of course they would have longer time to make preparations for celebrating the jubilee in a fitting manner. They were really in a very satisfactory position at the end of the fiftieth year, and they ought in some way or other to put that fact on record before the public in a proper celebration of the jubilee. With reference to the Howard Medal competition, he should like to add to what was stated in the report that the proposal to enlarge the scope of the subjects of competition had the full approval of Dr. Guy, who was the founder of the medal, and to whom they were all indebted for most active exertions in selecting the subjects and studying the papers which were communicated. Dr. Guy was entitled to their warmest thanks for the services he had rendered to the Society in connection with the medal, and he was sure they would all be glad to hear that the change recorded in the report of the Council had met with his entire approval. It would hardly have been fitting that the change should be made without Dr. Guy having given his approval. There were one or two changes proposed in the Council, and he thought that Mr. Chubb, who was retiring, was entitled to their special thanks for the services he had rendered for several years. It was perhaps only people like himself who had actually held the office of secretary who really knew what labour had to be done by the secretaries. He was quite sure, now that Mr. Chubb was terminating his labours, that they ought to give him their best thanks for the services he had rendered. He believed they ought to be very well satisfied indeed with the recommendation of the Committee as to the new Secretary to replace Mr. Chubb, namely, Mr. Baden-Powell, who was well known to many of them in connection with statistical and economic studies, and it was very much to the advantage of the Society that he had allowed his name to appear in nomination. For some little time he would not be able to devote much time to the interests of the Society; but after a few months, when he came from the continent, he thought they would find him a very energetic worker, and that they might look for some benefit to the Society from his services. In conclusion he wished to thank the members very much for the support he had received during the last two years, during which he had been President. It was a great satisfaction to him to see that the new President recommended to them was Sir Rawson Rawson. He was a gentleman who had long been well known to the Society; they all knew what he had done for the Society, not only during the last few years, but long before many of them were connected with it. He was sure that under his auspices they would have a very prosperous period during the next two years.

Mr. J. O. Chadwick said he gladly availed himself of the privilege accorded to him of seconding the adoption of the report

of the Council and statement of accounts. He thought it scarcely possible to imagine a more satisfactory condition of affairs than that which had been presented to them at the close of the fiftieth year of the Society's existence; and that if those far-seeing gentlemen who, on the 15th March, 1834, established the Society, could have looked forward through the vista of half a century, he doubted whether they could have hoped for a better position for the institution they then founded. Upon one point the Chairman had expressed unnecessary regret, namely, that the excess of assets over liabilities did not appear to keep pace with the increase of the Society's subscription income. As the Society's income increased, its power of usefulness ought to be extended, and naturally its expenditure would be increased in a corresponding degree. For the past two years there had been a very proper avenue for the employment of some portions of the Society's surplus funds in the expenditure upon the library and its model catalogue—an expenditure which he thought no Fellow could fail to perceive was for an object of exceeding value and permanence. Another cause would tend to prevent that excess extending in the future, because the privilege they had hitherto enjoyed of meeting in that house had cost the Society so little in the way of rent, that the rental involved in the necessary removal to other premises, would clearly operate to some degree against the Society's funds. That, however, was an expenditure of an indispensable character, and he trusted that in the locality to which they were about to move, the Society might still have before it a great career of even more extended usefulness, and that the central situation selected for it would be found generally convenient.

The motion was carried unanimously.

Sir Rawson Rawson asked if he might venture to suggest to the members present that the thanks of the Society should be given to the Council of King's College, and to the Vice-President of the Educational Department, for the accommodation given in Jermyn Street, and also to Mr. Chubb for his services as Honorary Secretary. They were mentioned in the Report, but probably it would be more acceptable to those gentlemen if the Members, as a collective body, offered them their thanks.

The Chairman said there was a motion as to Mr. Chubb.

Sir Rawson Rawson said that in that case he would merely propose that they should offer their cordial thanks to the Council of King's College and to the Vice-President of the Educational Department of the Privy Council, for their courtesy, and for the accommodation they had given to the Society.

Professor Leone Levi said he had great pleasure in seconding the resolution, which was carried unanimously.

Mr. Rowland Hamilton and Mr. W. H. Millar having been appointed Scrutineers of the Ballot—

The PRESIDENT said that the Scrutineers had reported that all the persons named on the list had been duly elected as the President, Council, and Officers of the Society for the ensuing year 1884-85.

A vote of thanks was given to the Scrutineers of the Ballot for their services.

Mr. W. H. MILLAR moved a vote of thanks to the President, the Council, and the Officers for their services during the past year, and to the Chairman for presiding on that occasion. He was sure he should carry the members all with him in that vote. The best testimony to the Council and the President was that they had done their work so efficiently, the whole thing working harmoniously and satisfactorily. He need not detain them, for he was sure they would pass unanimously a vote of thanks to those gentlemen for the efficient services they had rendered in their several capacities.

Mr. QUOADT seconded the vote of thanks, which was carried unanimously.

The PRESIDENT having called upon Mr. J. B. Martin as one of the office bearers to return thanks—

Mr. JOHN BIDDULPH MARTIN said the President had called upon him to say something in reply to the vote of thanks they had been so good as to pass to their Officers for their services during the past year. He thought, in the report which had been read, for which he was to some extent responsible, he had said almost all he had to say. He had only perhaps to regret that the presentation of the catalogue had not been a part of the formal business of the day. Copies of the work would be found on the table and in the room. It had been, he might say, the subject of much, and almost of painful anxiety to the Library Committee during the past year, owing to the very great labour which had attended its compilation. The labour of making out in duplicate or triplicate the slips for each individual work, so as to ensure, as far as they could, the completeness of the catalogue and index, had been very great, and the expenses also had been considerable. He hoped that it was now a very efficient catalogue of their valuable library, and that in their new premises they would be able to show their library to better advantage than they had hitherto been able to do, and that it would be of the greatest use to the Society and to the public at large. He believed he was right in saying that there was probably no Society of a kindred nature which had such a valuable collection of works, and one, therefore, which ought to have such a complete catalogue. He hoped that the resources of the Society would suffice to supplement it by a volume which he feared would not be of much inferior dimensions, giving a complete index to the catalogue. He did not know whether he ought to say anything on the subject of the jubilee, because that subject was under consideration. It seemed natural to hold a jubilee on the fiftieth year, but he believed

they did not want for a precedent in deferring it to a subsequent period. Instances had occurred quite recently which gave them a precedent in that direction. He hoped they would be able to secure the attendance of some of their foreign friends whom many of the members of the Society had met at previous international statistical congresses. Their own jubilee meeting perhaps might not ultimately reach the dimensions of an international congress, but he hoped that the work which they would be enabled to do would be none the less valuable on that account. He was, perhaps, going too far afield in making those remarks. He had only to express his gratitude for the vote of thanks passed to the Officers, and to say that the labour they had devoted to the services of the Society was amply compensated by the appreciation which they believed they had received from the members at large.

Some Statistics *of* Egypt.

By Joseph Rabino, Esq.

[Read before the Statistical Society, 17th June, 1884. Sir Rawson W. Rawson, K.C.M.G., C.B., a Vice-President, in the Chair.]

CONTENTS:

	PAGE
Introduction	415
I.—Population; Epidemics	416
II.—Extension of the Area of Cultivated Land	420
Introduction of the Irrigation System	421
Execution of Public Works	422
Forced Labour	423
III.—Products of Egypt	425
Cotton, Sugar, Cereals	425
Estimates of Gross Annual Value of Crops and Yield per Acre	432
IV.—Trade of Egypt	434
Exports and Imports	434
Analysis of Egyptian Foreign Trade	438
V.—Finances	439
Revenues and Expenditure	439
The Law of Liquidation	441
Analysis of Revenues	443
Debts of Fellaheen	444
Impoverishment of the Soil	446
Railways, Post Office, &c.	448
VI.—Irrigation Question	451
Proposals of Rousseau Pacha and Colonel Scott Moncrieff	451
Scheme of Mons. Lamotte for regulating the Rise of the Nile and further increasing the Cultivated Area	456

Introduction.

It is with feelings of extreme diffidence that I venture beyond the ranks of your silent members in submitting to your notice a paper on so well worn a subject as Egyptian finance.

A tyro in statistical studies, exception may well be taken at the grouping of my figures, the logical sequence of my facts, as well as at the conclusions I deduce from them. I have not aimed however at presenting you a scientific essay, but have contented myself with the more modest object of furnishing a rough debtor and creditor account, which may enable you to discuss from honest and impartial data the actual position and the probable future of the land which has lately absorbed so much of the attention of the English nation.

The charges of the Egyptian State absorb annually:—

E£	
2,183,737	for the unified stock*
1,158,534	„ preference stock
377,858	for interest on Suez Canal shares, terminable in 1894, Moukabalah indemnity, terminable in 1950, and Daira Khassa annuity.
4,500,000	the normal cost of the government of the country, inclusive of the Turkish tribute.
700,000	to which should be added 200,000*l.* for probable deficit on domain administration, and say 500,000*l.* interest on a loan necessary for covering floating debt, Alexandria indemnities, Soudan war expenses, &c., &c.
8,920,129	Say nine millions of pounds.

Are the normal resources of Egypt able to bear this burden, and may we reasonably hope they will be sufficient to meet it in the future, as well as to pay off debt or accumulate reserves against unforeseen difficulties? Such are the questions I propose to examine; but to do so with some chance of success I think we may not unprofitably commence with a glance back at what has hitherto been accomplished.

I.—*Population; Epidemics.*

The Egypt we are acquainted with dates politically from the commencement of this century, whilst a period of barely twenty years covers all that is of interest in its financial history.

How the marvellous land of plenty of Herodotus dwindled down into a miserable Turkish pashalik; how in the struggle between the desert and the cultivated land, nature so overpowered man that a country of 7 to 8 millions of inhabitants, the granary of ancient Rome, was reduced to a province of 2 millions, must be left to the inquiries of the historical student. Ours be the more congenial task of tracing the progress from a disorderly despotism to something like regular government; of following the development of the resources of the country, and of noting how comparative well being has taken the place of abject misery.

To Mohammed Aly, an obscure and illiterate soldier of fortune of Cavalla, is due, directly or indirectly, almost all that has been hitherto accomplished; he it was who initiated more or less successfully every improvement brought about, and thanks to his

* This estimate was made before the publication of the English and French estimates. No account is taken of the occupation charges nor of a reduction in the interest due to England and the bondholders, but the uncertain items are taken so largely that the total agrees approximately with the French figures.

The Egyptian pound is to the pound sterling as 100 : 97½; it contains 100 piastres tarif.

efforts his grandson was enabled to say, without gross exaggeration, that Egypt was henceforth a European State.

We must not, it is true, judge by European standards the dealings of Mohammed Aly with his people, but must give to him, as to every Eastern potentate, the benefit of the axiom, "The end "justifies the means."

In the construction of the Mahmoudieh Canal, for instance, he spared neither "the gold of the rich nor the lives of the poor;"* 313,000 fellaheen were told off to the work, with in many cases no better tools than their ten fingers; but, thanks to this enterprise,† which was completed in thirteen months, Alexandria is for the third time on the waterway to Cairo, and from a wretched town of 8,000 inhabitants—fishermen, and in many cases pirates—it has risen to the position of a splendid city of over 200,000 souls, and the greatest Mediterranean port of the East. It was hard too for dignitaries of the State to receive *nolens volens* gifts of land burdened with taxes, and hampered with the condition of reclaiming tracts of desert; but to this high handed, and at the time questionable largesse, the rich native families of to-day owe their fortunes.

In following the story of modern Egypt we shall find the hand or the brain of this great man in every forward step.

The first element of appreciation of the progress of an agricultural State is undoubtedly the movement of the population, and in the present case we find very encouraging proofs that Egypt has fairly gained ground. The number of inhabitants has at a moderate estimate doubled itself since the beginning of the century. We must, however, bear in mind that in Egypt figures are to a very great extent a matter of hypothesis. As to the point in question neither deaths nor births were for a long time registered at all as far as the native population was concerned, and even now births are very imperfectly recorded, and the death lists are most untrustworthy. As to the foreign consulates, their usages are more or less exact according to the customs of the countries they represent, as well as to the personal characters of their respective officials.

The savants who accompanied the French expedition estimated the population of Egypt at 2,000,000, and the first census was only taken some fifty years later.‡

In 1835 a computation was made of the number of houses throughout the country, and granting eight persons for each house in the capital and four elsewhere, the total of 2,500,000 was

* "Egypt," by the Baron de Malortie.
† Clot Bey, "Aperçu General de l'Egypte." Paris, 1840.
‡ Lane's "Modern Egyptians."

arrived at. These figures however must have been too low, for in 1846 the census taken gave the following results :—*

Lower Egypt	2,779,667
Middle „	519,582
Upper „	1,163,995
Total	4,463,244

The foreign population, of which the workmen in the arsenals formed a large proportion, was estimated at 60,000.

Colucci Pacha, president of the Intendance Sanitaire of Alexandria, a medical body which gives great attention to statistics, in a pamphlet on the cholera of 1865, gives the population as being in 1855, 4,402,013.

The movement of births and deaths was as follows, according to the same authority :—

Year of Hegira		Births.	Deaths.	Population in 1855.
1272....	From the 12th Sept., 1855, to 30th Aug., 1856	138,309	93,449	4,402,013
'73....	„ 31st Aug., '56, „ 19th „ '57	128,138	107,936	—
'74....	„ 20th „ '57, „ 7th „ '58	161,702	99,392	—
'75....	„ 8th „ '58, „ 30th July, '59	159,345	100,750	—
'76....	„ 31st July, '59, „ 18th „ '60	163,353	131,968	—
'77....	„ 19th „ '60, „ 9th „ '61	171,552	113,292	—
'78....	„ 10th „ '61, „ 27th June, '62	176,909	112,100	—
'79....	„ 28th June, '62, „ 17th „ '63	179,634	118,548	—
'80....	„ 18th „ '63, „ 4th „ '64	173,820	170,283	—
'81....	„ 4th „ '64, „ 26th May, '65	165,772	131,152	—
		1,618,534	1,178,870	—
Total excess of births over deaths				439,664
Excess per annum 43,966, or nearly 1 per cent., bringing the population on 26th May, 1865, to				4,841,677

These figures were subsequently altered by the same author to 4,498,948, and 4,904,992 respectively.

De Regny in his "Statistique d'Egypte," 1872, gives the following figures, taken for the most part from contemporary official documents :—

	Males.	Females.	Total.	Foreigners.	Total.
Lower Egypt Governorships	279,368	285,170	564,538	83,555	648,093
„ Moudiriehs..	1,277,843	1,333,472	2,611,315	4,483	2,615,798
Middle Egypt „	296,372	303,224	599,596	—	599,596
Upper „ „	668,995	664,447	1,333,442	—	1,333,442
Red Sea Ports	3,401	3,075	6,476	—	6,476
	2,525,979	2,589,388	5,115,367	88,038	5,203,405

* De Regny, " Statistique de l'Egypte, 1870."

Dr. Rossi Bey puts the population in 1875 at 5,251,757.

The details of the census taken in 1882 have not to my knowledge been published; but the Government in a pamphlet just issued gives the following:—

*Population of Egypt Proper (excluding Nomad Bedouins).**

	Males.	Females.	Total.
Of 10 years of age and under	1,174,437	1,104,854	2,279,291
Over 10 years of age	2,090,422	2,187,202	4,227,624
Total inhabitants	3,264,859	3,292,056	6,556,915

We see therefore that the figures as far as obtainable give us:—

1800 about	2,000,000
'46	4,463,244
'55	4,402,013
'65	4,841,677
'72	5,203,405
'75	5,251,757
'82	6,556,915

When we consider that Mohammed Aly maintained an army and navy of over a quarter of a million,† a terrible tax on so small a population, and that the great plague of 1835 carried off in Cairo alone 40,000 inhabitants,‡ according to official returns, and that moreover from 1830 to 1865 there were no less than five outbreaks of cholera, viz.:—

July,	1831.			
24th June,	'48.			
25th July,	'50.	Cairo, mortality, official,	1,960	
4th June,	'55.	,,	4,000	
11th ,,	'65.	,,	6,104.	Total 61,022

we may assuredly take it that our first element of appreciation has given a most favourable result.

Before concluding this subject it may be interesting to compare the mortality officially declared for the cholera epidemics of 1865

* The following are the latest returns of the population of the nine largest towns in Egypt:—

Cairo	368,108	Zagazig	19,046
Alexandria	208,775	Rosetta	16,671
Tantah	33,725	Port Said	16,560
Damietta	34,046	Suez	10,913
Mansourah	26,784		

† Dr. Clot Bey gives a total of upwards of 272,000.

‡ Lane says 80,000, that is one-third of the population.

and 1883; but it must be borne in mind that the general impression in Egypt is that the figures should be doubled.

Lower Egypt, with a population of say 3,300,000, lost in 1865 43,000 or 1·3 per cent.; in 1883 22,500 or 0·75 per cent.

Middle Egypt on 600,000, lost in 1865 4,000 or 0·66 per cent.; in 1883 2,500 or 0·41 per cent.

Upper Egypt on 1,300,000, lost in 1865 14,000 or 1·04 per cent.; in 1883 3,600 or 0·27 per cent.

But I repeat, mortality returns of epidemics are considered to be grossly understated, and therefore these figures can scarcely be trusted.

II.—*Extension of the Area of Cultivated Land.*

A more encouraging feature still than the growth of the population, is the extension of the area of cultivated land, and the partial transformation of the system of agriculture, by which the country has been enabled not only to furnish an ample food supply for its own needs, but also to obtain a gradually increasing production of other articles; thus constituting a progressive surplus of exchanges in its own favour.

At the beginning of the century the French savants estimated the area of cultivated and reclaimable land at some 5,000,000 acres.

In 1840 the survey gave, according to Dr. Clot Bey, the following results:—

	Cultivated. Feddans.	Uncultivated. Feddans.	Total Feddans.
Lower Egypt	2,219,000	1,581,000	3,800,000
Middle „	725,400	868,600	1,594,000
Upper „	846,826	773,174	1,620,000
	3,791,226	3,222,774	—
Subsequently cultivated	75,000	75,000	—
	3,866,226	3,147,774	7,014,000

Note.—The feddan is equal to 4,200·8 square metres; for our purpose we will take it throughout as equivalent to an English acre. Its value has varied considerably, we take the actual equivalent.

No survey has been taken since this one, but a cadastre commenced in 1878 is in course of progress; meanwhile the cultivated land actually taxed was according to the budget of 1883 as follows:—

	Feddans.
Upper Egypt	1,146,849
Middle „	812,536
Lower „	2,825,080
	4,784,465

Putting on one side therefore the land reclaimed from the beginning of the century to 1840, we find that since that time there has been a gain of in round figures about a million feddans, or some 25 per cent.*

But it is not so much by the mere adding of acre to acre that the country has so largely benefited, as by the introduction by Mohammed Aly and the completion by his successors, more particularly by the late Khedive, of a system of a constant irrigation in Lower and part of Middle Egypt, which has enabled the rich but exhaustive crops of cotton, sugar, and maize to be cultivated.

The ancient system which has existed from time immemorial, and still exists in Upper and a part of Middle Egypt, is of the simplest description.† The country is divided into basins of inundation; the embankments along the Nile and the parallel rising ground of the desert forming two sides, whilst transversal dykes of equal height constitute the others. Many of these basins are of great extent, and some have an area of 80,000 feddans. The Nile fills these basins during the inundation season, and the water is left in them for about seventy days.‡

When the river begins to fall the basins are emptied by cutting the dykes at their lowest points, or opening the sluices where such exist, and allowing the water to return to the Nile.

Beans, lupines, clover, millet, wheat, and barley are sown in the liquid mud; the harvest takes place in March, and reaping, threshing, and winnowing, all of the rudest description, occupy three months.

A large part of the year is necessarily occupied by *corvée* work at the canals and dykes, but much labour might be economised by the construction of sluices, thus abolishing the barbarous system of destroying and reconstructing portions of the dykes.§

Besides the labour required for maintaining and improving the inundation system, the introduction of the irrigation system with its three years' rotation of crops and constant tillage, implied the

* Yacoub Bey Artin in his recently published work, "La Propriété foncière en "Egypte," gives the following figures showing the progress in the extent of the cultivated area, they may usefully supplement those given above:—

Year.	Feddans.
1813	2,904,970
'63	4,395,303
'75	4,703,456
'80	4,769,006

† "Exposé du Ministère des Travaux Publics sur les Irrigations d'Egypte," par Rousseau Pacha, 1883.

‡ "Egypt and the Egyptian Question," by Mackenzie Wallace.

§ "Exposé du Ministère des Travaux Publics," by Rousseau Pacha.

construction of a network of canals wherever it was intended to produce the valuable crops of cotton, sugar, and maize.

In 1840 the engineers appointed to superintend the public works could show the following handsome account of their labours :—*

	Length of Canals, &c., in Kilometres.	Excavations, Cubic Metres. [000's omitted.]		Masonry, Cubic Metres. [000's omitted.]	Average Excavations, 6 Years. [000's omitted.]
Lower Egypt	937	80,515,	Masonry	503,	20,730,
Middle „	86	3,384,	„	249,	8,137,
Upper „	266	38,686,	„	211,	11,509,
	—	—	Lesser works, &c.	1,850,	—
	1,289	122,585,		2,813,	40,376,

Twelve hundred and eighty-nine kilometres of canals or embankments, requiring the excavation of 122½ millions of cubic metres of earth, besides the construction of bridges and dykes, necessitating 2,800,000 cubic metres of masonry ; such was the estimate of work done nine years before Mohammed Aly's death. The average year's digging for six years previously exceeded 40 millions of cubic metres.

The materials for following up the operations in this direction are wanting, but we may at irregular intervals catch glimpses of the works executed. Thus the ex-Khedive, in a speech delivered in 1868, declared that in the five preceding years, 207 bridges, 40 canals, 25 aqueducts, conduits, syphons, &c., 5 sluices, 30 floodgates, 1 floating bridge, and 4 stone quays had been made.†

In the following table the work done from 1868 to 1872 is summarised by De Regny :—‡

	Bridges.	Other works.	Canals.	Length, Kilometres.	Cubic Metres. [000's omitted.]
Lower Egypt	214	28	44	580	43,800,
Middle Egypt—					
Beni Souef and Fayoum.....	—	1	—	—	—
Minieh	1	7	—	—	—
Upper Egypt—					
Siout	10	5	2	10	100,
Keneh	15	—	1	15	200,
Ghirgeh.....	2	8	—	—	—
To which must be added the Ismailieh Canal	—	—	1	70	9,500,
And the Ibrahimieh Canal.....	—	—	1	150	38,000,
	242	49	49	825	91,600,

* Clot Bey, "Aperçu Général de l'Egypte."
† De Regny, "Statistique de l'Egypte, 1870."
‡ "Statistique de l'Egypte, 1872."

An account of the present extent and condition of the canals, dykes, bridges, &c., is unobtainable. Even a map of the irrigation system does not, I am told, exist, but the figures quoted, uncertain and imperfect as they are, will give some idea of the enormous amount of labour necessary to establish the network of canals required by the modern irrigation system, and to maintain the watercourses and dykes in repair for the old inundation system.

The results obtained are due entirely to the system of forced labour or *corvées*, of which it may not be inopportune to say here a few words.

Forced labour has an ugly sound to English ears, and rightly so, for this institution has produced the most crying injustices, and is credited with intolerable corruption and brutality. The village sheikhs have or had arbitrary power in the choice of the men; gangs were sent long distances for no purpose but to benefit private individuals. The work being unpaid, is in many instances wasted: thus Colonel Scott Moncrieff saw a gang of over 200 men up to their waists in water attempting to cleanse a canal, which half a dozen labourers with ordinary appliances might under competent superintendence have easily and speedily emptied.

But, on the other hand, it must be borne in mind that this institution has existed, and necessarily so, in Egypt as far back as history extends. The inundation system could only be carried out by the employment of an immense sum of common and therefore forced labour: without it the country would have starved. Moreover, this method of cultivation requiring little labour, the tax in kind was and is still in Upper Egypt incomparably lighter than a money tax would be.

The irrigation system could only have been created by forced labour, and its maintenance will long require the use of the same instrument. Indeed, the Ministry of Public Works complains that even the services of some 120,000 men for over five months in the year are quite insufficient for the wants of the country.* In his report published last year he gives the following particulars showing the work proposed for 1881 and 1882, the amount done, and what had to be put off or abandoned:—

* "Ministère des Travaux Publics; Compte Rendu des exercices," 1881 et 1882.

Earthwork in Cubic Metres.

[000's omitted.]

	1881.		1882.	
	Projected.	Executed.	Projected.	Executed.
Dykes of common interest	5,807,	826,	2,432,	1,065,
„ general „	17,645,	12,951,	17,833,	12,249,
Canals, Nili, common interest	5,367,	3,711,	5,443,	2,506,
„ general „	9,968,	7,138,	6,909,	5,619,
Canals, Sefi irrigation, common interest	7,368,	5,310,	9,012,	4,911,
„ general „	7,777,	6,433,	9,385,	7,055,
	53,932,	36,369,	51,014,	33,405,

Note.—Deficiency in 1881 ..... 17,563,000 cubic metres.
„ '82 ..... 17,609,000 „

Return of Labour Required and Amount obtained.

Year.	Labour Required.			Labour Obtained			Deficiency of Men according to Average Time and Work.
	Number of Men.	Number of Days at Work.	Average Work per Day in Cubic Metres.	Number of Men.	Number of Days at Work.	Average Work per Day in Cubic Metres.	
1881....	174,781	157	1·960	122,272	165	1·800	59,083
'82....	173,998	150	1·950	111,654	167	1·790	58,852

On the other hand the following sums were paid for ransom of forced labour :—

	Number of Men.	E.£
1880.....	1,665	999
'81.....	39,329	45,910
'82.....	8,417	9,396

E.£18,127 were claimed from the Domains Administration as an equivalent for the services of 15,213 men.

The greater part of the labour was furnished by the following provinces :—

	1881.		Average Number of Days Work per Head of Population, Male.	1882.		Average Number of Days Work per Head of Population, Male.
	Men.	Days.		Men.	Days.	
Lower Egypt—						
Dakalieh	11,342	209	9·77	8,737	210	7·56
Charkieh	11,523	180	10·60	6,459	195	6·44
Garbieh	13,683	220	9·78	12,375	206	8·21
Menonfieh	12,866	190	11·37	13,435	191	12·86
Upper Egypt—						
Ghirgeh.....	14,771	132	10·37	18,592	135	13·36
Keneh	20,062	105	14·63	12,633	115	10·08

Finally for the years 1880-82—

	Cubic Metres.
The average annual amount of work required was	53,000,000
Whilst the annual average amount of work done was....	34,000,000
Leaving an annual deficiency of	19,000,000

We see therefore that so far from it being possible to abolish forced labour, its operation must be extended or supplemented by other agencies if the productivity of the country is to be maintained. For the present it is indispensable that the *corvée* system should be carefully regulated, that its forces should be economised as far as possible by strict technical supervision, and that wherever possible machinery should be introduced to replace it.

It is doubtful if forced labour can ever be abolished, but the engineers at the head of the public works department will have to study the measures requisite to reduce its amount to the minimum necessary for the conservation and development of the agricultural system.

III.—*Products of Egypt.*

Having noticed the extension of the cultivated area, and the partial substitution of the irrigation for the inundation system, together with the agencies by which these improvements have been brought about, we have next to examine the tangible results of these changes in the increase of the produce of the country.

The products of Egypt fall naturally into three divisions: cotton, which is grown in Lower Egypt; sugar, in Middle Egypt; and cereals, principally in Upper Egypt. There is also a zone of rice along the Mediterranean coast, but this item is not a large one; dates are grown all over the country.

An herbaceous kind of cotton producing a coarse fibre long existed in Egypt, as in Malta and Syria, and was used not for clothing, for which native flax and wool sufficed, but for stuffing mattresses. Some sixty years since, however, M. Jumel, a

Genevese, who was seeking his fortune in Egypt, noticed a fine and till then unobserved variety of the cotton plant in the gardens of Mahon Bey in Cairo. The plant in question had been brought from Sennaar, where it is indigenous, and attains the proportions of a tree. The climate, soil, and conditions of Lower Egypt being admirably suited to its culture, always supposing a sufficient supply of water, Mohammed Aly, to whom M. Jumel addressed himself, was penetrating enough to see the advantages of its introduction, and started the undertaking with characteristic energy. Skilled overseers were named in various villages to superintend the cultivation, and in a short time the most encouraging results were obtained. The cotton was received in Europe with great favour, and classified immediately after the finest Sea Island. It is still known as Jumel, Mahon, or Mako quality.*

The quantities produced, according to Mr. Fowler's report on cotton in Egypt, published in 1860 by the Manchester Cotton Supply Association, and quoted by De Regny, were as follows, from 1821-59:—

Year.	Quantity.	Value.	Year.	Quantity.	Value.	Year.	Quantity.	Value.
	cwts.	£		cwts.	£		cwts.	£
1821	944	3,020	1834	143,892	884,935	1847	257,492	487,752
'22	35,108	108,064	'35	213,064	1,068,020	'48	119,965	167,961
'23	159,426	488,906	'36	243,230	894,383	'49	257,510	515,020
'24	228,078	775,465	'37	315,470	757,489	'50	364,816	839,176
'25	212,318	552,026	'38	238,833	716,670	'51	384,439	688,980
'26	216,181	562,070	'39	134,097	468,105	'52	670,129	1,341,128
'27	159,642	415,069	'40	159,301	414,722	'53	477,397	954.794
'28	59,255	154,063	'41	193,507	540,006	'54	477,905	764.740
'29	104,920	251,808	'42	211,030	390,882	'55	520,886	937,594
'30	213,585	512,604	'43	261,064	391,596	'56	539,885	1,295,724
'31	186,675	466,687	'44	153,363	561,920	'57	490,960	1,227,420
'32	136,127	508,381	'45	344,955	404,080	'58	519,537	1,091,027
'33	56,067	314,018	'46	202,040	404,080	'59	502,645	1,113,419

It will be remarked in examining this table that although the cotton crops start promisingly, the increase in the production from 1824-49, that is to the death of Mohammed Aly, is very trifling, considering the tempting amounts of the returns. In 1824 the quantity grown was 228,000 cwt., whilst the average of the years 1845-49 barely exceeds this amount. Twice only during the thirty-nine years does the crop go beyond 300,000 cwt., whilst on the other hand from 1849 the amount increases immediately, and maintains an average of 500,000 cwt. for the next ten years.

This result is to be partly attributed to the system of monopoly, by which the government became the sole dealer in all the valuable products of the land, depriving thereby the fellaheen of

* "Travaux inédits de l'Institut Egyptien," 1860.

all inducement to enterprise or energy by despoiling them of the fruits of their labour. Moreover, claiming to be the sole owner of the soil, the State did not even grant the unhappy peasants an indisputable life tenancy, but altered the allotments at its own pleasure, besides directly appropriating large tracts of valuable lands for the use of the vice-regal family. The monopoly system was efficacious enough for initiating the cultivation of cotton, but it arrested its progress, and would eventually have reduced it to insignificant proportions.*

Under Abbas Pacha's reign however this system was abolished, and during the viceroyalty of his successor more equitable regulations were made as to the land. The peasants being interested in the produce of the soil they tilled, applied their full energies to the work, with what results we see.

But the great outburst of energy was caused by the rise in prices due to the American civil war, and from 1862 till to-day we find that the cotton crop takes its rank as the staple produce of the country.

The following table gives the exports of cotton from 1860-73 :—

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	cwts.	E.£		cwts.	E.£
1860	439,837	1,107,887	1867	934,978	3,997,584
'61	522,982	1,430,880	'68	1,185,164	5,270,409
'62	719,395	4,920,660	'69	1,054,544	5,814,387
'63	814,950	6,503,308	'70	1,078,873	5,075,291
'64	1,187,993	10,157,370	'71	1,618,816	6,242,688
'65	1,593,738	11,809,603	'72	1,901,913	9,236,598
'66	1,011,540	6,918,936	'73	2,104,254	10,070,631

These figures are taken from manuscript tables compiled by private persons, from data furnished by clerks in the customs. The publications of Messrs. Carpi, Vivanti, and Co., quoted by De Regny, give the quantities from 30 to 50 per cent. higher for the years 1863 to 1870; I have preferred the more moderate estimates.

From 1874 we are however on firm ground, the figures given emanating officially from the Custom House authorities, which have year by year improved and completed their statistical reports.

The following table of values, to which I have added the cotton seed produce, brings us up to date :—

* "Travaux inédits de l'Institut Egyptien," vol. i, 1860; also Lane's "Modern "Egyptians."

Year.	Cotton.	Cotton Seed.	Year.	Cotton.	Cotton Seed.
	E.£	E.£		E.£	E.£
1874	9,676,282	1,310,933	1879	8,118,851	1,316,864
'75	8,853,634	1,243,524	'80	7,467,775	1,547,062
'76	8,762,711	1,455,859	'81	8,890,629	1,506,585
'77	7,158,641	1,625,730	'82	7,385,985	1,161,399
'78	5,003,510	1,010,160	'83	7,465,730	1,696,534
Average of value of cotton exported last ten years					7,878,375
" seed "					1,387,465
					9,265,840

or about three-quarters of total exports due to the cotton plant.

The Custom House returns from 1874-83 being imperfect as to quantities, I replace their figures by the following estimates of crops kindly furnished me by Messrs. Carver and Co. They are to be taken as representing the cotton year from September to August inclusively, and therefore will not coincide with the Custom figures of value.

Year.	Cotton.	Cotton Seed.
	cwts.	cwts.
1872–73	2,061,000	2,747,535
'73–74	1,974,000	3,442,843
'74–75	2,280,000	3,258,345
'75–76	2,632,000	4,454,436
'76–77	2,456,000	4,198,128
'77–78	2,325,000	4,102,015
'78–79	1,465,000	2,810,170
'79–80	2,798,000	5,306,262
'80–81	2,456,000	4,655,574
'81–82	2,544,000	4,827,677
'82-83	1,973,000	3,923,341
11 years' average..	2,269,500	3,975,121
Or tons	—	198,756

The crop for 1883-84 is over 2,320,000 cwt., and that of 1884-85 promises to be very abundant.

Next in order, though of far less importance, the cultivation of sugar, claims our attention.

Sugar canes have long been grown in Egypt, but merely for the molasses, and for the green canes, which the natives relish exceedingly.

In 1833 we find that there were grown some 7,500 cwt., entirely consumed in the country.

The manuscript statistics mentioned above give us from 1863-73 the following figures as exports :—

Year.	Sugar.	
	cwts.	E.£
1863	6,717	7,820
'64	2,017	3,312
'65	1,354	2,223
'66	956	1,569
'67	48,230	41,829
'68	127,380	109,525
'69	257,262	367,280
'70	248,972	299,573
'71	312,692	369,970
'72	400,746	508,948
'73	809,890	827,175

During the reign of Ismael Pacha, as we see by these figures, the government commenced growing sugar on a large scale. The Ibrahimieh canal, over 90 miles in length, was dug in order to irrigate the Daira or Khedivial estates in Middle Egypt; the railway to Upper Egypt was built, and eighteen splendid refineries, mostly containing four sets of machinery, were erected.

It is melancholy to reflect that these costly establishments were so far beyond the requirements of the most extreme development of the culture, that twenty-two sets of machinery, perfectly new, representing six of the refineries, are now in course of re-sale at the price of old metal.

The following are the statistics of production since 1875 as given in the Daira yearly reports, 1878-82 :—

Years.	Produce.	Feddans planted.	Sugar Cane.	Per cent.	Yield.	Value.
			cwts.		cwts.	E.£
1875	Sugar	37,968	7,677,434	7·45	572,311	564,443
'76	,,	37,614	7,163,762	7·57	542,361	416,167
'77	,,	39,949	8,819,800	8·34	735,516	889,953
'78	,,	42,549	8,983,287	8·53	762,680	772,281
	Molasses	—	—	—	156,472	14,270
'79	Sugar	36,313	7,328,304	8·37	609,424	582,274
	Molasses	—	—	—	157,300	8,212
	Canes, alcohol, &c.	—	—	—	—	137,998
'80	Sugar	37,930	8,092,841	7·34	679,921	731,040
	Molasses	—	—	1·63	150,402	12,131
	Canes, alcohol, &c.	—	—	—	—	33,917
'81	Sugar	20,414	2,497,000	8·03	262,062	298,137
	Molasses	—	—	2·08	67,330	8,359
	Canes, alcohol, &c.	—	—	—	—	37,095
'82	Sugar	26,737	7,660,773	8·39	642,750	670,656
	Molasses	—	—	2·09	160,095	16,973
	Alcohol	—	—	—	—	55,473

The average annual yield for the eight years is therefore over E.£650,000.

The percentage of saccharine matter extracted is also to be taken into account, the increase of 0·36 of 1882 on 1881, bearing principally on the first quality, is equivalent to an increase of receipts of E.£30,000.

During the year 1883 the crop realised over 400,000 cwts., of which 290,000 was first quality, and this year it is said to exceed 900,000 cwts.

It is hoped that a much larger amount may be reached before long.

The enormous increase in agricultural produce since the beginning of the century is no less apparent in the cereal than in the other crops.

Fifty years ago we learn from an observer* admirably placed to obtain information, that the crops gave the following results; whilst De Regny,† on what he considers high authority, gave the yield of 1872, which I place in juxtaposition :—

	1833.	1872.
	Bshls.	Bshls.
Wheat and maize	11,825,000	13,750,000
Barley	3,300,000	13,750,000
Beans and lentils	3,850,000	11,000,000
Rice	412,000	2,420,000
	19,387,000	40,920,000

In the space of less than forty years, therefore, the food crops more than doubled themselves.

If we take the figures of exports we find they tell an even more promising tale.

In 1836 the value of the food products exported was :—

	£
Rice	160,000
Dates	48,000
Wheat, &c.	65,000
Total	273,000

whilst from 1863 to 1873 the following amounts are given unofficially :—

* Clot Bey, "Aperçu Général de l'Egypte."

† De Regny, "Statistique Générale de l'Egypte," 1872.

Year.	Wheat.		Rice.		Beans.	
	cwts.	E.£	cwts.	E.£	cwts.	E.£
1863	2,050,842	506,558	106,709	81,099	1,397,122	263,601
'64	231,865	64,319	54,787	56,509	162,105	48,600
'65	—	—	39,579	34,377	—	—
'66	32,986	13,161	44,789	36,471	699,738	274,210
'67	2,100,531	902,096	46,053	51,675	1,628,364	469,911
'68	3,018,808	1,204,504	35,467	28,881	2,397,673	734,587
'69	839,203	325,895	29,742	23,008	964,472	291,504
'70	39,450	15,358	23,932	18,063	1,024,274	325,136
'71	1,222,813	559,422	20,996	14,346	2,380,996	734,625
'72	2,283,494	902,020	22,290	16,032	1,363,461	391,750
'73	1,032,895	468,983	89,087	66,961	631,477	208,743

The official statistics 1874-78 give the following exports, value only :—*

Year.	Wheat.	Rice.	Beans.
	E.£	E.£	E.£
1874.....	143,511	99,077	474,790
'75.....	1,041,575	83,606	557,930
'76.....	823,301	127,388	961,877
'77.....	966,689	167,461	929,345
'78.....	92,085	161,340	219,789

Finally, the Custom House gives us full particulars from 1879 to 1883.

	1879.		1880.		1881.	
	cwts.	E.£	cwts.	E.£	cwts.	E.£
Wheat	3,351,434	1,344,092	2,491,750	1,053,171	1,138,629	462,058
Beans.....	2,593,549	758,114	1,822,372	622,420	1,977,592	39,567
Barley	279,598	82,501	227,575	71,622	131,263	661,215
Maize	146,308	41,673	408,450	125,855	94,610	35,475
Lentils	92,985	32,641	118,640	39,990	129,600	27,207
Rice	163,734	131,912	263,384	205,475	193,701	39,469
Sundries	—	9,902	—	19,698	—	146,701
Flour.....	—	88,356	—	156,178	—	12,000
Dates.....	—	30,274	—	22,541	—	20,062
	—	2,519,465	—	2,316,950	—	1,443,754

	1882.		1883.	
	cwts.	E.£	cwts.	E.£
Wheat	186,758	81,956	1,617,747	545,070
Beans.....	1,678,804	557,204	2,908,679	902,623
Barley	39,930	11,307	103,715	24,350
Maize	494,318	160,376	173,047	41,961
Lentils	222,325	66,767	225,424	61,693
Rice	153,013	117,157	162,238	121,357
Sundries	—	7,915	—	14,184
Flour.....	—	12,594	—	8,766
Dates.....	—	10,941	—	13,033
	—	1,026,217	—	1,733,037

Note.—"Commerce extérieur de l'Egypte," 1879-80, 1882-83, and table for 1881.

* "Commerce extérieur de l'Egypte," 1874, 1878. Amici Bey.

Not only therefore has the food supply of Egypt kept pace with the increase of the population, but the country is able to export from 1,500,000*l.* to 2,000,000*l.* worth of bread stuffs, beans, rice, and dates, and that notwithstanding the substitution of cotton and sugar for cereals in the greater part of lower and middle Egypt.

The estimates of the annual gross value of the total produce of the country vary very considerably, and necessarily so on account of the imperfect data upon which they are based.

Mr. McCoan speaks of 53 million pounds, quoting doubtless the "Statistique Agricole et Animale," published by the late Mouffettish in 1876; but as this personage's calculations gave magnificent or disastrous results accordingly as the State required a loan or sought to lower the interest due to its creditors, I think we may pass to another estimate.

Mr. Mulhall in his article on Egyptian finance in the "Contem-" porary Review" for September, 1882, gives the following, which I confront with the returns published by Amici Bey, late Directeur Général de la Statistique, in his "Essai sur la Statistique d'Egypte," vol. ii, and based upon information received from the different Moudiriehs.*

	Acres.		Mulhall.	Amici Bey, 1878.
			£	E.£
Cotton	872,000	290 mln. lbs. cotton	9,900,000	3,524,172
		10 ,, seed	1,800,000	
		4 mln. loads stalks	400,000	
Sugar	80,000	70,000 tons	1,700,000	533,166
Maize	1,884,000	55 mln. bshls. = 6 ardebs p. acre	8,500,000	1,009,390
Wheat	1,150,000	33 ,, = $5\frac{3}{4}$,,	8,300,000	2,595,455
Beans	1,220,000	23 ,, = $3\frac{3}{4}$,,	4,800,000	1,331,664
Barley	521,000	16 ,, = 6 ,,	2,500,000	621,892
Rice	50,000	2 ,, = 8 ,,	800,000	291,853
Lentils	150,000	3 ,, = 4 ,,	700,000	139,572
Flax	24,000	6,000 tons	400,000	20,708
Clover	390,000	—	5,000,000	2,953,153
Dates, &c.	—		—	1,158,387
			44,800,000	15,230,641

The amount of the taxed cultivated land is 4,800,000 feddans, let us call it 5 millions, allowing for incomplete and erroneous returns, the sum usually taken. Mr. Mulhall's total gives us a yield of nearly 9*l.* per feddan, an utterly incredible result. M. Amici Bey's returns, on the other hand, are for a disastrous year, and ought probably to be doubled to bring them up to an

* Amici Bey, 1878.

average yield. I will endeavour to form an independent estimate, however, to compare with the two given :—

	£
Cotton, the average for the last eleven years was as we have seen	7,900,000
And the cotton seed	1,400,000
I have struck out cotton wood as too vague, but I have made no deduction for land carriage to Alexandria, representing some 2 to 300,000*l.*	
Sugar. We have seen that the Daira properties produce on an average 650,000*l.* worth of sugar, &c., annually; to this sum we will add 50,000*l.* as an outside estimate of the yield of other growers, say	700,000
Cereals. The consumption of cereals is usually computed at 700 lbs. yearly per head of population, which on a total of 6,500,000 gives us 40,500,000 cwts., of which roughly speaking one-half would be wheat, two-fifths maize and beans, and the rest rice, lentils, &c.	13,250,000
The date crop is estimated by Amici Bey at over a million pounds, and although it is extremely difficult to estimate this item [the produce of a date palm being worth 20 francs near Alexandria and Cairo, and varying down to 2 or 3 francs in the interior, whilst in some districts, the consumption being insufficient and the means of transport wanting, it is valueless] we will adopt this figure	1,000,000
Clover, used for feeding the draught cattle and camels, as well as for the small quantity of cattle used for food by the natives. It has no marketable value, being consumed on the spot and mostly green. Including sundries, we will put this down as	2,500,000
Finally, the total exports, after deduction of sugar and cotton, already reckoned, and ivory, ostrich feathers, and gums, not produced by Egypt proper, would be	2,250,000
Total	29,000,000*

This estimate gives the yield per feddan at $5\frac{2}{5}$*l.*, which I should think rather over than under the mark.

Taking the yield in quantities we have :—

* This estimate must be taken as nothing more than a rough attempt to reconcile imperfect and in some cases apparently contradictory data—very poor materials, but the best at hand. It may be divided into two parts :—

£	
12,250,000	average exports for ten years (ivory, gum, and ostrich feathers deducted).
16,750,000	the estimated annual cost of the food of 6,500,000 inhabitants, together with the forage of their camels, oxen, buffaloes, horses, mules, asses, goats, sheep, &c.
29,000,000	

The latter sum is of course hypothetical; but if it should appear too low it still supposes a yield per feddan which the partisans of a reduction of the land tax consider exaggerated. With the scanty data in existence, however, their estimate is as hypothetical as mine, perhaps more so. (See Mr. Moberly Bell's letters in the "Times" and "Egyptian Gazette.")

	Mr. Mulhall's Estimate.	Estimate of De Regny in 1872, given on good Local Authority.
	Per feddan.	Per feddan.
Wheat	29 bshls.	12 bshls.
Beans	19 „	10 „
Barley	30 „	11 „
Rice	40 „	15
Lentils	20 „	10 „

IV.—*Imports of Egypt.*

Hitherto we have only analysed the export side of the Customs returns; it is time to look at the imports, as well as at the general movement of the foreign commerce of Egypt.

At the beginning of the century no foreign trade may be said to have existed. In 1836 we have the following figures:—

	£
Exports	1,700,000
Imports	2,000,000

This last total includes—

	£		£
Cotton goods	640,000	Timber	360,000
Cloth and woollen goods	292,000	Iron and wire	160,000
Silk goods	92,000	Coal and charcoal	52,000
Ironmongery and cutlery	100,000	Cochineal	44,000

About 600,000*l.* represented the requirements of Mohammed Aly's navy, arsenal, and manufactories, the rest being mostly for the clothing of the people in general and the luxury of the rich.

Mr. Mulhall tells us that in 1862 the value of the imports was 1,991,000*l.*, against exports of 4,454,000*l.*, leaving thus a considerable surplus of exchange in favour of the country.

From 1863 to 1873 the following is a list of the most interesting items of imports:—

	1863.	1864.	1865.	1866.	1867.	1868.
	E.£	E.£	E.£	E.£	E.£	E.£
Cotton goods and other manufactured articles	1,639,964	1,797,383	1,330,533	1,361,968	1,806,308	1,756,500
Coal	127,022	128,593	223,900	173,495	118,030	107,523
Timber	178,897	204,025	213,691	204,448	220,480	268,044
Iron	50,239	53,282	104,924	95,160	101,321	92,450
Machinery	114,974	186,564	174,486	136,795	107,647	150,331
Indigo	21,919	25,752	22,005	21,638	13,250	10,641
Copper	108,169	129,143	114,027	80,179	70,472	92,637
Boots and shoes, leather	54,625	71,867	77,447	89,473	100,322	97,066
Refined sugar	9,504	16,924	24,474	28,523	29,141	30,854
Wines, spirits, &c.	135,708	181,169	261,894	267,710	277,868	269,375
Oils	68,555	243,741	259,248	278,299	293,039	292,286
Petroleum	—	—	—	—	—	24,981

	1869.	1870.	1871.	1872.	1873.
	E.£	E.£	E.£	E.£	E.£
Cotton goods and other manufactured articles	1,759,360	2,016,791	1,657,473	1,788,257	1,763,481
Coal	259,034	433,052	298,008	289,221	359,007
Timber	271,397	403,850	379,594	397,664	479,594
Iron	12,068	151,077	92,066	119,561	92,188
Machinery	109,400	275,113	186,370	242,172	216,387
Indigo	10,343	9,009	8,071	8,309	9,152
Copper	97,433	102,406	87,191	103,068	87,898
Boots and shoes, leather	95,360	74,043	79,032	75,198	80,463
Refined sugar	38,697	38,451	33,413	33,425	48,756
Wines, spirits, &c.	223,959	233,954	224,195	220,436	213,686
Oils	251,693	261,534	244,879	250,010	284,879
Petroleum	23,537	87,789	41,510	85,111	86,438

With the above unofficial and in many cases approximate amounts we may compare the returns from 1874 to 1882, which are official :—

*Imports.**

	1874.	1875.	1876.	1877.	1878.
	E.£	E.£	E.£	E.£	E.£
Cotton goods	1,296,410	1,530,911	1,217,279	1,255,224	1,124,475
Coal	782,369	955,467	567,164	647,455	664,813
Ready made clothing	528,448	386,629	251,515	210,681	223,106
Woollen goods	213,132	176,388	206,928	123,569	143,647
Iron	171,683	112,465	149,143	105,797	108,310
Timber	160,862	144,271	102,366	85,651	110,887
Yarns	123,419	134,973	129,054	132,989	108,383
Wines, spirits, &c.	118,151	129,715	115,295	96,861	116,874
Indigo	101,196	190,384	84,368	121,550	274,491
Refined sugar	97,798	112,361	100,632	138,563	157,809
Boots and shoes	95,598	92,989	73,514	78,089	78,046
Oils	83,323	106,571	58,123	61,682	83,989
Copper	71,241	64,529	59,223	35,774	33,270
Machinery	69,650	41,942	68,975	34,996	54,390
Drugs and medicines	68,396	83,541	71,565	58,633	54,787
Petroleum	66,837	57,640	40,353	104,151	86,409
Candles	61,737	64,566	63,086	60,235	54,467

	1879.	1880.	1881.	1882.
	E.£	E.£	E.£	E.£
Cotton goods	1,324,457	1,701,248	1,534,554	1,176,162
Coal	561,783	653,670	870,657	750,510
Ready made clothing	165,100	162,107	150,778	147,155
Woollen goods	169,003	274,786	238,049	142,518
Iron	51,119	136,606	147,509	101,678
Timber	118,293	202,719	215,182	243,610
Yarns	113,716	189,433	189,109	149,384
Wines, spirits, &c.	159,827	163,916	205,496	263,595
Indigo	158,828	212,152	248,026	206,449
Refined sugar	168,352	195,479	237,279	178,501
Boots and shoes	87,575	100,099	109,543	97,228
Oils	80,011	97,242	86,802	117,307
Copper	46,337	95,056	101,770	46,644
Machinery	66,873	117,026	178,528	164,741
Drugs and medicines	75,736	82,494	63,325	60,261
Petroleum	90,367	73,017	143,399	112,957
Candles	61,570	71,938	49,308	46,629

Of these figures clothing is represented by:—

	E.£
Cotton goods—average for nine years	1,350,000
Ready made clothing „	247,000
Woollen goods „	187,000
Boots and shoes „	90,000
	1,874,000

of which the item cotton goods is almost entirely for native use.

* "Commerce Extérieur de l'Egypte", 1874-78—1879—1880-82. The report for 1881 was not published. The figures above are from the tables of duty paying imports, and are therefore below the real amounts, about 20 per cent., although the imports from Europe, excluding Turkey, would be approximately correct.

	E.£
Food gives us—Wines, spirits, &c.	152,000
Refined sugar	154,000
Drugs, &c., &c.	68,000
Mostly consumed by Europeans	374,000

Cotton ginning, sugar refining, the building trade, shipping, and State railways, &c., absorb :—

	E.£
Coal	717,000
Iron	120,000
Timber	154,000
	991,000

and native industry takes :—

	E.£
Yarns	142,000
Indigo	177,000
Copper	61,000
	380,000

The progress of the country is apparent in the increase of the items coal, iron, &c.

The natives import a much larger quantity of indigo, but this is to be partly ascribed to the disappearance of this dye from Egyptian products. Fifty years ago the country grew as much as 1,000 tons annually, whilst at present the quantity is insignificant.

The following are the totals of the exports and imports from 1874 to last year :—

Years.	Imports.	Exports.	Total.	Excess of Exports on Imports.	Amount Taxed.		Total.
					Imports.	Exports.	
	E.£	E.£	E.£	E.£	E.£	E.£	E.£
1874.....	5,070,641	13,423,472	18,494,113	8,352,831			
'75.....	5,619,466	13,333,334	18,952,800	7,713,868			
'76.....	4,253,191	13,561,285	17,814,476	9,308,094	Statistics	wanting	
'77.....	4,493,441	12,750,232	17,243,673	8,256,582			
'78.....	4,844,341	8,097,277	12,941,618	3,252,936			
'79.....	6,428,121	14,234,033	20,662,154	7,805,912	5,002,163	13,439,058	18,441,221
'80.....	8,324,548	13,891,487	22,216,035	5,566,939	6,549,932	12,983,203	19,533,135
'81.....	8,692,507	13,178,271	21,870,778	4,485,764	6,937,442	12,982,507	19,919,949
'82.....	6,869,853	10,993,570	17,863,423	4,123,717	5,557,795	10,837,124	16,394,919
'83.....	8,596,976	12,309,885	20,906,861	3,712,909	7,328,855	12,177,065	19,505,920
Total	63,193,085	125,772,846	188,965,931	62,579,761	—	—	—
10 yrs.' avge.	6,319,308	12,577,284	18,896,593	6,257,955	—	—	—
Last 5 years' avge.	7,782,401	12,921,499	20,703,850	5,139,048	6,275,237	12,483,791	18,759,028

Against the excess of imports are to be placed the interest—

	£
On the Unified Preference Daira and Domain debts, say.....	4,200,000

Mostly due to Europe by the—

Turkish Tribute and interest on Suez Canal shares held by England, say	900,000

Representing the Turkish tribute, and the interest on the Suez Canal shares due to the English government.

According to Messrs. R. I. Moss and Co.'s yearly statistical tableaux, the following is the movement of specie during the last five years :—

	Import.	Export.	Net Import.
	£	£	£
1879.....	5,615,900	801,200	4,814,700
'80.....	4,791,700	405,600	4,386,100
'81.....	1,650,061	1,295,206	354,855
'82.....	2,185,677	882,263	1,303,414
'83.....	1,756,213	402,108	1,354,105
	15,999,551	3,786,377	12,213,174
Average annual import.....	—	—	2,442,635

As the liabilities of the State towards England, Turkey, and the bondholders generally would about absorb the surplus produced by the excess of exports over imports, we must suppose that these 12 million pounds represent, firstly, the interest on Egyptian stock held in the country, of which it is impossible to estimate the amount; secondly, money lent to Egypt. Part of the proceeds of the Domain loan were remitted, it seems, in 1879-80, to which we must add the share and debenture capital of the Crédit Foncier Egyptien and the Land and Mortgage Company of Egypt, and part of the capital of the Alexandria Water Company.

We must also take into account specie sent to the Soudan in payment of ivory, gum, &c., and for military purposes, and money taken by private individuals who left the country during the panics of 1882 and 1883.

The foreign commerce of Egypt is thus analysed in the Customs report for the year 1882 :—

	Imports.	*Proportions of* 1,000.
Great Britain	424·01	Cotton goods, yarns, gunny bags, machinery, metals, rice, &c.
Austria	97·05	Clothing, mercery, woollen goods, timber, sugar, paper, &c.
France and Algeria	129·28	Mercery, woollen goods, silks, coffee, sugar, wines, candles, &c.
India	44·21	Indigo, coffee
Italy	32·38	Mercery, silk, furniture, wines, dried fruit, oils, timber, stone, &c.
Russia	30·66	Timber, wheat, flour, cattle
Turkey	206·66	,, silk, coffee, fruit, tobacco, soap, provisions
Other countries	35·75	Timber, petroleum
	1,000·00	

	Exports.	*Proportions of* 1,000.
Great Britain	649·81	Cotton, cotton seed, beans, maize, sugar
Austria	38·72	,, sugar
France and Algeria	85·58	Cotton, beans, maize, sugar
Italy	66·34	,, maize
Russia	86·92	,,
Turkey	48·25	Sugar, rice, hides
Other countries	24·38	Cotton, hides, rags
	1,000·00	

V.—*Finances.*

The proverb that "those nations are happy which have no "history," is in no case so true as in questions of finance.

We know scarcely anything of the State revenues and expenditure before Saïd Pacha's reign, but the little that has come down to us is of an eminently satisfactory nature.

At the beginning of the century a small tribute was exacted by Turkey, which was gradually increased as the resources of the country augmented.

For 1883 the following figures are furnished by Dr. Clot Bey :—

Revenues.

	£	£
Taxes striking the land—		
Land tax	1,125,000	
Cereals	180,000	
Date palms	20,000	
		1,325,000
General taxes—		
Poll tax, karatch (tax on non-Mussulmans), legacy duty, dues on cattle, fishery, salt, &c., &c.		406,190
Customs, town dues, and excise		137,960
Coinage		15,000
Monopoly. Cotton, indigo, opium, sugar, rice, &c., lime, natron, &c., as also manufactures, linen, silk, mats, &c.		147,000
		2,511,150

This last item has long been struck out of Egyptian State accounts, and the profits of agriculture and labour now go to the occupiers of the soil, to the great benefit of all concerned.

The expenditure for the same year was as follows:—

	£
Tribute to Turkey	60,000
Army	948,960
Navy, including pensions and clerks' rations	674,100
Public works, palaces, bridges, dykes, and factories	140,000
Raw material for factories	75,000
Viceregal expenses, purchases of jewels, shawls, &c.	90,000
Caravans of pilgrims	10,000
	1,998,060

When once the enormous army and navy requirements are struck out or reduced to reasonable limits, the expenditure becomes insignificant, and we can understand therefore that when Abbas Pacha got rid of army and monopoly together, he so improved the finances of the country that he was able to leave a considerable treasure to his successor.

When Saïd Pacha died the revenue balanced the expenditure; but this sovereign laid the foundation stone of the Egyptian debt of over 90 millions, by his issue of a 7 per cent. loan of 3,300,000*l.* destined to meet the engagements entered into with M. de Lesseps for the construction of the Suez Canal.

Desirous of eliminating from this paper all controversial topics, I do not think it necessary to attempt an account of Ismail Pacha's reign, or to suggest a discussion as to whether he was a greedy and unscrupulous spendthrift who ruined his country, or a public benefactor more sinned against than sinning, who, if he left Egypt burdened with debt, gave it also the means of meeting all reasonable liabilities. Moreover, we are met here with difficulties from which we have so far been free.

Hitherto our figures, if incomplete and in many cases hypothetical, were at least honest and free from all partisan influence. No sooner, however, do we attempt to form an opinion on the finance policy of the late government, than we have to face the most irreconcilable statements.

The Suez Canal, for instance, is given us as the origin of the Egyptian debt; and so it is, inasmuch as it was the means of showing the Government with what fatal facility it could borrow money. No doubt also it involved the State in many troublesome and burdensome engagements for which it had a very inadequate return. But what did it cost Egypt? M. de Leon says* 17 million

* "Khedive's Egypt," De Leon.

pounds; M. Dervieu, in a pamphlet published in 1871, makes it 16 million pounds; M.M. Oppenheim* and Mr. Dicey† about 10 million pounds; the Baron de Malortie in his recent work adopts Mr. Mulhall's figures,‡ and is content with 6,700,000*l.*; whilst Mr. Fitzgerald reduces the sum to 5,500,000*l.*, and even considers that the ex-Khedive made a profit of 1,300,000*l.* on the transaction. How discuss estimates like these before the Statistical Society?

Again, as to the justification of the enormous debt and the rapidity with which it was accumulated, various calculations have been made concerning the amount usefully and reasonably spent from 1863 to 1878; but to what conclusions can we arrive when we find an authority like Mr. Dicey say that 75 million pounds, or to be generous 50 million pounds, are totally unaccounted for, whilst the Baron de Malortie's estimates make the ex-Khedive 13 million pounds out of pocket by his fifteen years' reign.

We will dismiss, therefore, the subject of the actual and immediate causes of the debt, contenting ourselves with remarking that although money was squandered recklessly and insanely, although adventurers, usurers, and contractors plundered the government outrageously, immense improvements were made during Ismail Pacha's reign, and the country generally, despite the burden of the debt, has benefited in every direction. The canal system has been enormously increased, and with it the resources of the land; the harbours of Alexandria and Suez have been improved; lighthouses erected, and nearly 1,000 miles of railway and 5,000 miles of telegraph built. The Post Office is almost exclusively in the Government's possession, and the State owns a line of Mediterranean and Red Sea steamers. Education has been seriously organized, and the general well-being of the people has greatly increased. Whether these advantages have been purchased at an extortionate or a fair price I consider foreign to our subject. Let us content ourselves by taking the position of the country as it is.

According to the law of liquidation the liabilities of Egypt in 1880 were as follows:—§

	E.£
Preference stock annuity	1,157,718
Unified „	2,263,686
Moukabalah indemnity	150,000
Daira Khassa annuity	34,000
Interest on Suez Canal shares	193,858
Administrative expenses as per budget	4,323,030
Unforeseen expenses	197,000
	8,319,292

* "Notes sur le Budget Egyptien," 1874.
† "England and Egypt," Dicey.
‡ "Egypt," by the Baron de Malortie.
§ "Rapport Annuel des Controleurs généraux pour l'année 1880."

To meet this sum the State had at its disposal:—

	E.£
Customs	531,000
Railways	561,000
Port of Alexandria dues	70,000
Revenues of assigned provinces	2,264,246
Total assigned revenues	3,426,246
Other revenues, unassigned	4,892,295
	8,318,541

To what extent may we take this sum of E.£8,318,541 as a normal estimate of revenue, and how has the law of liquidation hitherto worked?

Messrs. Oppenheim in their "Notes sur le Budget Egyptien," 1874, quoted by the Baron de Malortie, give the following totals of revenues collected:—

	£		£
1863	4,813,970	1868	7,277,785
'64	5,649,795	'69	7,181,247
'65	5,706,919	'70	7,193,465
'66	5,937,710	'71	7,088,700
'67	6,932,119	'72	7,409,491

We have not any other figures; and when a government takes 12 million pounds as a reasonable estimate of revenues, and afterwards finds a miscalculation of 4 million pounds in its accounts, it is not possible to accept its statements seriously. It is quite certain, however, that abnormally large sums were extorted from the fellaheen up to 1879, and that their present debts are in a great measure due to the oppressive taxes they have had to submit to.

From 1872 to 1879 the receipts are so inextricably confused by the Treasury bond transactions that no trustworthy figures may be said to exist.

Since the law of liquidation was adopted, however, we are able to follow the financial position year by year, and may rely on the official statements.

The revenue returns for the years 1880 to 1882 present the following results:—*

* "Rapport Annuel adressé par les Controleurs généraux à S. A. le Khedive. Année 1881." Cairo, 1882. "Rapport Annuel adressé par le Ministre des finances à Son Altesse le Khedive. Année 1882." Cairo, 1883. "Budget pour 1883."

	Receipts.			Expenditure.			
	Assigned	Unassigned Revenues.	Total.	Debt.	Administration.	Total.	Surplus.
	£	£	£	£	£	£	£
1880.....	4,575,860	4,422,539	8,998,399	3,911,863	3,820,511	7,732,374	1,266,025
'81.....	4,775,895	4,454,070	9,229,965	4,109,861	4,267,562	8,477,423	752,542
'82.....	4,456,063	4,396,794	8,852,857	4,039,257	4,718,340	8,757,597	95,260
Average	4,602,606	4,424,467	9,007,077	4,020,327	4,268,804	8,322,464	704,609
Budget, 1883....	4,413,676	4,390,951	8,804,627	4,167,067	4,414,851	8,581,918	222,709

The surplus revenues to the end of 1882 amounted to E.£2,113,827, to which must be added the surplus realized in 1883.

The following decrease of debt has been effected by the employment of these sums :—*

	31st December, 1880.	31st December, 1883.	Capital Extinguished.
	£	£	£
Unified stock	57,776,340	55,993,260	1,783,080
Preference stock.....	22,587,800	22,401,800	186,000
	—	—	1,969,080

Moreover, the sum of nearly 300,000*l.* has been spent on the Soudan expedition, the army, the railway, and public works, exclusive of the amounts inscribed in the budget.

The result of the accounts as a whole therefore is that on an average the expenditure was kept at the limit fixed by the normal budget of the law of liquidation, whilst the receipts show a surplus of some 700,000*l.* per annum.

But the law of liquidation tied up the better moiety of the revenues so tightly, that the actual working of the financial machinery in moments of pressure is unfair and oppressive to the State. Thus, in 1882, whilst on the one hand some 400,000*l.* of debt was paid off the administrative accounts show a deficit of over 320,000*l.* irrespective of 100,000*l.* deficit of the Domains, and the charges for the Soudan war and the occupation. Last year the same result ensued : 700,000*l.* of debt was extinguished, whilst the

* "Compte rendu de la Commission de la Dette Publique pour 1880." Cairo, 1884. Ibid. for 1883.

Government was in such urgent need of funds, that it had to borrow large sums from the local banks and Messrs. Rothschilds of London.

Unfortunately too the result of starving the Government is to delay or prevent the execution of the most urgent irrigation works, thus rendering the soil less productive, and compromising the revenues if not immediately in a proximate future. It is now generally admitted that the first condition for putting the finances in order is to modify the law of liquidation, so as to give the State a reasonable control over its own revenues, whilst fully protecting the rights of the creditors.

We will now look at the revenues in detail, commencing of course with the land tax, which is the backbone of the country's finances. This item realized in :—

Land Tax, Date Tree Tax, and Sundry Direct Taxes.

	E.£
1880	5,421,107
'81	5,311,150
'82	5,411,978
Whilst for 1883 the estimate was	5,367,684
And for 1884 ,, ...	5,366,203

Can this amount be depended upon in the future? There are two very serious considerations which have to be weighed in answering this question. The first is the debts of the fellaheen, and the second, the alleged exhaustion of the soil, the two being most intimately connected. It is clear that if the peasant be so ground down by debt that he must find money by any means, he will be in great straits to pay his taxes, will be unable to improve his holding, and on the contrary will be forced to grow more and more cotton, thus damaging his land and mortgaging his future resources.

The debts of the fellaheen are estimated at very different amounts, for on this point, as on so many others, no trustworthy data exist. Lord Dufferin in his report tells us that the mortgage debt on the 30th June, 1882, was E.£5,821,912, which sum he increases by 3 or 4 million E.£, the amount according to "good "authority" of unsecured debts.

I do not think there exists any authority which can in the remotest degree be called good for determining this last amount.

I have been favoured with an estimate made by Mr. Duke Baker, the manager of the Commercial Bank of Alexandria, which I reproduce :—

	E.£
Advances by the Credit foncier Egyptien	1,500,000
„ land and mortgage of Egypt	460,000
	1,960,000
Less deduction for advances to pachas and rich men	750,000
	1,210,000
Advances from Alexandria banks, which directly or indirectly are lent in the villages—amount furnished by them	850,000
Alexandria merchants and private capitalists. Reputed amount increased 50 per cent. to cover omissions and underestimates	2,500,000
Cairo merchants and capitalists	500,000
Local advances in villages, not included above; these last two amounts are hypotheses only, but considered rather above the amount	2,000,000
	7,060,000
Less repayments during cotton crop, 1883, and purchases of land by creditors, say 30 per cent. on E.£5,850,000	1,755,000
	5,305,000

Even this moderate estimate is to my mind too high. The amount advanced by the Credit foncier was according to the last balance sheet over E.£2,000,000; but of this sum less than E.£350,000 is represented by loans under E.£2,000,—a high limit—; the rest is advanced in very large amounts to wealthy landowners, and cannot in any sense be reckoned as advances to peasants, to whom not a piastre is re-lent. The manager of the Land and Mortgage Company does not think that his establishment has advanced E.£100,000 which should go down as peasants' debts; we must therefore reduce the above totals to something like four millions and a half.

It is to be observed that the fellaheen suffer far less from the amount and interest of their debts, than from the sudden stoppage of credit due to the want of confidence generated by the events of 1882, and the peculiar system of administration since introduced, by which one set of officials has power, but no responsibility; whilst a second set has responsibility, but is without power.

Much wild rhetoric is expended on the high rates of interest which the village debts have to bear; but here considerable deductions have to be made. In the first place, the Credit foncier and the Land and Mortgage loans are made at something like 10 per cent., repayment included, a by no means burdensome rate in a country where the legal interest is 9 per cent. As to the other debts, it must be remembered that they were contracted at a time when the Government itself borrowed at 20, 25, and 30 per cent. discount; that the money passes through many hands; the

original European lender with decent security getting some 8 to 10 per cent.; but the native village lender who has to deal with peasants offering no guarantees, charging of course a very high rate. Another point is that the advances are made in very small sums; I have seen mortgage deeds for 2*l.* or 3*l.* and for a sum of 3,500*l.* documents representing some 200 to 250 debtors. To say nothing of the difficulty of collecting capital and interest, the smallest charge appears exorbitant when reduced to percentages and compared with 3 to 5 per cent. current in England. In the East, finally, we must not expect Threadneedle Street terms; even in Australia, which is as English as the county of Kent or West Riding of York, I find by the "Economist" that the banks, who I suppose are the cheapest lenders, get 9 per cent. for their money.

The rate of interest here has largely fallen; the Government, which seven years ago paid 30 per cent., now finds funds easily at 6 per cent.;* the commercial and agricultural rates have likewise been lowered, though in lesser proportions. Let the Government be once recognized as stable, and capital will flow in fast, land banks will find it to their interest to take the place of the native lenders, and, granting some precautionary measures in the way of registration regulations, we should very soon hear no more of village debts. After all, the debt concerns Lower Egypt almost exclusively, and four, five, and even eight millions can scarcely be called ruinous for a territory which exports over nine million pounds worth of cotton per annum.

The question of the alleged exhaustion, or rather impoverishment, of the soil is much more difficult to discuss, owing to the vagueness of the theory and the complete absence of sufficiently authenticated facts. I cannot help thinking that the amount of damage actually done or immediately probable is exaggerated, for notwithstanding the increase in the proportion of land allotted to cotton, the returns of the crops which we have already noticed seem by no means to bear out the theory of the exhaustion of the soil.

The administration of the Domains gives the following yearly averages of the yield of cotton on its estates during the last five years:—†

Year.	Feddans Cultivated.	Yield in Pounds per Feddan.
1879	52,365	345
'80	44,743	296
'81	42,876	263
'82	41,611	206
'83	38,937	272

* This was written in March, and is of course not the case now.

† "Rapports Annuels de l'Administration des Domaines," 1879-82.

No conclusion can be safely drawn from these figures, as the same lands are not cultivated every year. The Domain lands are of excellent quality, but labour under the disadvantages inseparable from cultivation by an administration which has enormous estates to supervise.

The average general yield given by De Regny in 1872 was 245 lbs.; the average five years' yield above would be 276 lbs., and as, according to Rousseau Pacha's reports on irrigation to the Ministry of Public Works, the amount of feddans cultivated on the irrigation system is under a million, the general average of cotton yield would be about 255 lbs.

At any rate, all are agreed that the damage, actual or prospective, is neither permanent nor irremediable. With political security to tempt European capital, and good administration to furnish the necessary irrigation and superintend and regulate agriculture, there is no reason why the crops should not maintain their present yield, and even increase as they have hitherto done.

After this long digression we will pass to the next item, viz., the Custom receipts:—*

Year.	E.£
1878 (tobacco not included)	486,162
'79	557,713
'80	667,199
'81	663,615
'82	532,778
'83	510,850

The successive increases are highly satisfactory, the fall in 1882 being of course due to the bombardment of Alexandria, and the emigration of the population during the military operations.

The town dues (*octrois*) are likewise very satisfactory in their yield:—*

Year.	Cairo.	Alexandria.	Provinces.	Totals.
	E.£	E.£	E.£	E.£
1879	274,825	120,022	77,030	471,877
'80	286,456	123,828	72,865	483,149
'81	319,167	134,883	84,258	538,318
'82	316,360	108,888	50,279	475,527

The small decrease of the Cairo receipts during the insurrection is very noticeable.

* "Rapport Annuel adressé par le Ministre des finances à Son Altesse le Khedive. Année 1882." Cairo, 1883.

The tobacco duties have yielded for the last five years :—*

	Tax on Land Growing Tobacco.	Town Dues.	Totals.
	E.£	E.£	E.£
1879	—	81,300	81,300
'80	27,818	76,619	104,437
'81	31,698	110,212	141,910
'82	49,158	91,643	140,801
'83	36,255	95,000	131,255
Total	—	—	599,703
Annual average yield	—	—	112,778

The confusion produced by the insurrection of 1882, and the cholera of 1883, greatly facilitated smuggling.

The Government is endeavouring to farm out the tobacco dues to a company, which will have the monopoly of the trade, and form a *régie* similar to those of France, Italy, Austria, and Turkey. The Government asks for 200,000*l.* a year, and a large and increasing share in the profits. Whatever the issue of the negotiations as to the conditions of the arrangement, it is certain the State will largely benefit by the proposal.

The railways, port of Alexandria, and postal services, next engage our attention.

The railway network has an extent of $939\frac{3}{4}$ miles, of which $155\frac{3}{4}$ are double lines. There are 101 stations, and the rolling stock comprises some 250 engines, and over 5,000 carriages, trucks, &c.

The statistics of the express traffic are as follows :—

	Lower Egypt.				Upper Egypt.			
Year.	1st Class.	2nd Class.	3rd Class.	Parcels.	1st Class.	2nd Class.	3rd Class.	Parcels.
				cwts.				cwts.
1877	33,606	153,737	1,388,042	25,644	4,837	17,672	317,483	2,972
'81	75,758	380,073	2,496,909	79,280	7,768	30,203	508,146	5,400
'82	66,874	342,005	2,117,269	91,768	7,191	29,140	512,804	6,084

The increase of 1881 on 1877 was :—†

1st Class	117 per cent.
2nd ,,	133 ,,
3rd ,,	76 ,,
Parcels	200 ,,

* "Notes et documents relatifs à l'Établissement d'une Régie Co-intéressée du Monopole des Tabacs en Egypte." Cairo, 1884.

† "Rapport de l'Administration des Chemins de fer, etc., pour 1882."

The year 1882 is exceptional, and only comprises nine months' traffic.

The tonnage was as follows:—

	Tons.
1877	688,984
'81	1,457,738
'82	1,068,403

This last being an increase of 55 per cent. on 1877.

The State telegraphs, which are under the same management, comprised in 1878 a total mileage of 2,436 for Egypt proper, and 2,465 for the Soudan.* The receipts were, in:—

	E.£
1877	17,088
'81	42,201
'82	54,463

an increase for this last year of 218 per cent., against increased expenditure of 25 per cent. only.

The following give the receipts and working expenses of railways and telegraphs:—

	1875.	1876.	1877.	1878.
	E.£	E.£	E.£	E.£
Receipts	1,029,102	1,035,483	1,146,421	870,887
Expenditure	586,195	548,175	550,832	409,061
Percentage of expenses..	57	$52\frac{9}{10}$	48	$43\frac{1}{3}$

	1879.	1880.	1881.	1882.
	E.£	E.£	E.£	E.£
Receipts	1,056,820	1,272,561	1,366,142	1,341,738
Expenditure	420,727	489,454	455,227	431,849
Percentage of expenses..	$38\frac{1}{10}$	$38\frac{3}{10}$	35	$31\frac{2}{3}$

The year 1883 gives receipts E.£1,225,063, against expenses E.£507,694, proportion 41 per cent.; the increased charges being probably due to the necessity of repairs caused by the rebellion of 1882. Indeed, a great deal of the line and rolling stock needs renewing, the strain of the military operations having been very severe. The law of liquidation thus presses heavily on this service, and tends to starve the line.

* "Essai de Statistique de l'Egypte," vol. ii, Amici Bey.

The port of Alexandria gave the following results :—*

	Receipts.	Expenses.	Surplus.
	E.£	E.£	E.£
19th May to 31st Dec., 1879....	23,819	2,950	20,869
,, '80....	52,032	8,814	43,218
,, '81....	72,047	14,168	57,879
,, '82....	69,272	18,814	50,458

The receipts of 1882 would have exceeded those of 1881 but for the events to which are due also the increased expenditure.

The post office gives the following returns :—*

	Receipts.	Expenditure.	Surplus.
	E.£	E.£	E.£
1878.....	59,189	54,171	5,018
'79	70,276	59,474	10,802
'80.....	80,682	69,992	10,690
'81.....	91,894	80,733	11,161
'82.....	85,471	85,216	255
'83.....	91,300	76,900	14,400

The surplus of 1882 was absorbed by the removal of the post office in Alexandria to new and handsome premises.

This year the Italian Government has given up its post office, leaving only the Austrian and French offices to compete with the State. These also will no doubt disappear eventually.

The salt dues have also greatly improved, and their collection has been simplified. Last year the budget put the net revenue to be expected from this source at E.£126,000.

We have thus passed in review all the notable items of the revenue returns.

I have endeavoured to show that there is no reason to fear a falling off of the land tax, provided only a sound and normal Government and a competent and energetic administration be provided for the country.

As to the other sources of income, not only do they maintain the figures of 1880, but they show considerable progress, and give unmistakable signs of elasticity for the future.

A total of 9 million pounds revenue may therefore be reckoned upon, even without the new sources of income to be found in a Régie de Tabac, the taxation of Europeans, stamp taxes, &c.

As to the expenditure, it may be kept well within the limits of the income, of course on condition of cancelling the obligation of

* "Rapport annuel adressé par le Ministre des Finances à Son Altesse le Khedive, année 1882." Cairo, 1883.

repaying such large amounts of debt, and putting on one side the occupation charges, which burden the country with the cost of two armies instead of one.

The Domains administration presents an annual deficit of 100,000*l.* to 200,000*l.*; but serious efforts are being made to sell the land in moderate holdings, and thus reduce the debt; as to the Daïra deficits, it may be expected that they have come to an end, for this year the estates have produced over 900,000 cwts. of sugar, and this production may eventually be increased very largely, some say trebled. Each year larger portions of land are being let with the condition that the sugar canes be sold to the administration, which system seems very advantageous. A judicious plan of encouragement to agents and officials has also been adopted.

VI.—*Irrigation Question.*

But the task of the rulers of Egypt would only be half accomplished if they kept no other end in view than the balancing of expenditure against income. Much more is required from an intelligent government dealing with such rich materials as are offered by the situation, soil, and general conditions of Egypt.

Nubar Pacha is reported to have said that the Egyptian question is a question of irrigation; and indeed it is evident that not only the progress, but the very existence of the country depends upon the annual overflow of the Nile, and the quantity of territory covered by its waters.

Every project of permanent and general improvement having therefore necessarily for basis the extension of the system of irrigation, and its maintenance in good working order, we must in appreciating such schemes begin by noticing the physical conditions of the country.

The irrigation question is twofold: firstly, how to maintain and extend the present system, so as to profit by all the advantages it can offer, notwithstanding the insufficiency of the *corvée* system to furnish the required amount of labour; and secondly, how to improve the conditions of the Nile itself so as to equalize the yearly overflow, and thus assure the annual crops, extend the system of irrigation, and reclaim the greatest possible surface of land.

The first of these aims is and has been for the last two years the object of the most serious study of the ministry of public works, which last year published two schemes by Rousseau Pacha and Colonel Scott Moncrieff respectively.

The Nile in its overflow fulfils a threefold function:* it supplies

* Mackenzie Wallace, "Egypt and the Egyptian Question."

the necessary water, it fertilizes the land* with its deposit, and it drains it, carrying off the deleterious salts, which rising to the surface during the inundation would otherwise poison the soil. For all these purposes a sufficient supply of water is required to fill the canals and basins, and to flow to the most distant points without precipitating its deposits on the way. How to obtain this result is the question discussed by the two eminent engineers named.

According to Rousseau Pacha, an elaborate system of steam pumping would most perfectly meet all requirements, and although costly, could be provided by taxes in ransom of a large proportion of forced labour which would thus be dispensed with. The following is briefly the purport of his proposals, and the principal arguments by which he supports them.†

The Egyptians of to-day, like their Pharaonic forefathers, divide their year into three seasons, the Chitoui or winter season, the Nile or inundation season, and the Sefi or summer, each of which correspond to a distinct kind of cultivation.

The Chitoui cultivation, confined almost entirely to Upper Egypt, and producing cereals, is carried on almost exclusively by means of basins of inundation. The Nile culture, producing maize, and restricted to the immediate proximity of the river, depends upon a series of shallow canals; it is very precarious, the crops standing ninety and in some cases only seventy days, and being exposed to destruction by too rapid a rise of the river. Finally, the Sefi culture, of cotton principally, in Lower Egypt requires a network of canals of a certain depth to ensure a constant supply of water.

Rousseau Pacha thinks the extension of the Sefi culture to the whole of Egypt impracticable, from the insufficiency of the water supply. Moreover, he considers the inundation basins indispensable for preventing a flooding of Lower Egypt; and points out also the necessity of maintaining a sufficient outflow for navigation and the wants of the people.

He advocates the following works, which he believes would place the actual system on a perfectly satisfactory footing, besides considerably diminishing the *corvée* work; but as a large portion would require several years to complete, and the needs of agriculture are pressing, he urges the immediate creation of as many pumping stations as possible, the advantages of which are

* The Nile deposit contains $\frac{2}{5}$ths clay, $\frac{1}{5}$th carbonate of lime, $\frac{1}{10}$th free carbonic acid, 5 to 6 per cent. oxide of iron, 2 to 3 per cent. carbonate of magnesia, and traces of silica in suspension. (Clot Bey, "Aperçu Général de l'Egypt.")

† "Exposé du Ministère des Travaux Publics sur les Irrigations d'Egypt," 1883.

that the shallow Nili canals might be used for the Sefi culture, that the level of the water would be raised, and the cleaning of the canals become unnecessary.

Upper Egypt.

	E.£
The substitution of sluices for the method of destroying and rebuilding portions of the dykes—187 works, comprising 696 arches, together with repairs to dykes	1,340,000

This sum would be covered by a ten years' annuity of E.£134,000, corresponding to a tax of P.20, say 4*s.* 2*d.*, per head of men subject to *corvée*, or by a fifteen years' annuity of E.£90,000, or P.15, say 3*s.* 2*d.*, per head: by means of which arrangement the *corvée* would be reduced one-half, at which figure it would remain permanently. The keeping up of these works would cost E.£30,000 per annum, or P.5 (1*s.* 1*d.*) per head of *corvée* men.

Middle Egypt.

		E.£
A sum of		18,750
will be required for raising water for irrigating some 34,000 feddans at present unsupplied.		
Completion of Canals—		
3,500,000 cubic metres of earth would have to be excavated, of which 1,200,000 by dredgers, and 2,300,000 by hand, at a cost of	E.£ 136,000	
Masonry	64,000	
Or a capital sum of	200,000	
To be extinguished in twenty-five years at 8 per cent.		16,000
The maintenance of the canal, 153 kilometres, say 300,000 cubic metres, at P.5		15,000
Say E.£1½ per feddan for twenty-five years, and E.£1 afterwards		49,750

Lower Egypt.

Far greater expense is necessary in Lower Egypt according to the same authority.

In the enumeration of the great public works executed from the time of Mohammed Aly to that of the present sovereign, I have purposely refrained from mentioning the magnificent "barrage" commenced some forty years since, and in great part completed by Ismail Pacha.

The object of this work was to raise the level of the stream some 4 to 4½ metres, and supply the whole Sefi system of Lower Egypt by means of three branches, or raïahs; the centre, or Menoufieh Raïah, which is in existence; the Eastern Raïah, which

was commenced only; and the Western Raïah, completed by Ismail Pacha, but for which pumping stations in the Beheru are substituted.

Unfortunately, the foundations of the barrage are insufficient, and Rousseau Pacha is of opinion that the whole work would have to be rebuilt in order to fulfil its original purpose. He believes that the elevation of the water would be noxious at certain points, by bringing its salts to the surface, and that it would be imprudent to make the whole irrigation system dependent upon one structure, to say nothing of the cost of digging new canals and building new dams, &c.

The barrage could be repaired, however, and employed for apportioning the waters between the Rosetta and Damietta branches of the Nile. The latter branch, which feeds almost the whole canal system, would be dry by this time (its mouth has already silted up 2½ metres in forty years), were it not that 1½ to 2 metres of water are retained for its benefit by the Western Raïah.

Lower Egypt, together with the province of Ghizeh, has a cultivated surface of 2,803,000 feddans, of which one-third, 934,333 feddans, is in Sefi cultivation, requiring a quantity of 25,000,000 cubic metres of water per day, inclusive of that needed by the rice plantations and the Mahmoudieh Canal.

Of this Rousseau Pacha would supply:—

19,300,000 cubic metres by steam pumps, and
5,700,000 „ canals fed by the Nile

The outflow of the river is—

41,000,000 cubic metres per 24 hours
3,000,000 less quantity absorbed by private pumps on the Upper Nile and improvements of the canals, leaving—
38,000,000 Of the 25,000,000 cubic metres needed
8,000,000 would be taken above the barrage, leaving—
30,000,000 of which
12,000,000 would be allotted to the Rosetta, and
18,000,000 to the Damietta branch.

The cost of this scheme would be as follows:—

Annual Irrigation Charges for Lower Egypt.

	Raising Water.		Putting in Working Order.						Maintenance.		
			Canals Fed by Pumps.		Outflow Canals.				Dredging.		
	Pumping.	Connecting Pumps with Canals.	Earthwork.	Masonry.	Earthwork.	Dredging.	Masonry.	Barrage.	Canals Fed by Pumps.	Outflow Canals.	Masonry and Barrage.
Capital	—	200,000	120,000	500,000	120,000	180,000	200,000	400,000	—	—	—
Annuity for 35 years at 7 per cent.....	—	14,000	8,400	35,000	8,400	12,600	14,000	28,000	—	—	—
Yearly expenses	248,550	—	—	—	—	—	—	—	100,000	100,000	40,000
	262,550		43,400		35,000			—	200,000		—
			106,400						240,000		

Total Annuity, E.£608,950.

This sum would be covered by—

1. An annual tax of P. 10 per feddan for pumping charges.

2. Either a further tax of P. 4 per feddan for repairing the barrage, or a grant of the ministry of public works, which would save E.£94,000 per annum by this scheme, and

3. The ransom of the *corvée* in Lower Egypt, which would bring in E.£300,000 at least.

Colonel Scott Moncrieff, in a reply to this able report, joins issue with Rousseau Pacha on the main point of raising water by steam pumps, and considers it would be better to stop the water in its course, rather than let it fall to a lower level and then raise it at a great expenditure of power.*

He by no means thinks the barrage need be re-built, but believes it might be put into a condition to raise with safety the level of the Nile 3 metres, which would be sufficient for actual purposes, as even $4\frac{1}{2}$ metres would be inadequate to irrigate the higher lands of the Galioubieh, Menoufieh, and Charkieh. The cost of this improvement he puts at less than E.£700,000.

Mr. Fowler proposed the reconstruction of the barrage with foundations of 18 metres, at a cost of a million pounds; Colonel Moncrieff sees no reason for going below 7 metres, having had to deal with far more unfavourable conditions in India without attaining that depth.

The danger of a high water level by the percolation of salts is vague, and could be obviated by drainage, and there is no reason why the irrigation system should be in peril by being dependent on the barrage.

Accepting Rousseau Pacha's estimate of the quantity of water required, Colonel Moncrieff would supply almost the whole either by new canals, or the better regulation of the existing watercourses. In fact he considers it perfectly practicable to utilise the barrage for his purpose without in any way changing the present system, and above all, without the expenditure of E.£248,550 for pumping.

Thus we see that as far as the maintenance and improvements of the actual irrigation system, so as to make it adequately serve all the needs of the country, is concerned, engineers of most unquestioned authority and of opposite views see no difficulties, technical or financial, in the task before them.

The second desideratum for Egypt is so to regulate the conditions of the river as to ensure a good Nile every year. The scheme of M. Lamotte, vague and shadowy as it is, deserves nevertheless a moment's consideration, if only as a dream of what might be done in this direction.

* "Rapport sur le Système d'irrigation dans la Basse Egypte and sur le Canal Ismailieh," par Colonel Scott Moncrieff, C.S.I., 1883.

How important the study of this problem is may be gathered from the examination of the register of the Rhoda Nilometer from 1825 to last year. Out of fifty-nine seasons, we find eleven rises noted as insufficient, and the cause of want and even famine, whilst six were equally prejudicial by overflooding the country. The export returns of 1878, following a bad Nile, and the statistics of Amici Bey already quoted, prove to what an extent the country may suffer from an unfavourable overflow. No measures for regulating the rise of the Nile have been taken since the semi-historical times of Moeris, when but half the rise now required was necessary for the wants of the country. The action of the waters was then less violent, and when the river fell only 12 to 15 cubits, a rise of 18 cubits, as mentioned by Herodotus, was sufficient.*

South of Khartoum there are in fact two rises, that of the Blue Nile and that of the White Nile. The former rises towards the end of April with a variable intensity, equivalent to a premature or delayed rise.

The Atbara, like its neighbour the Blue Nile, sends its waters into Egypt twenty-two days before the rise of the White Nile can make its appearance.

The rise of the two Niles is awaited for the opening of the sluices in Egypt, and the most favourable height, viz., 24 cubits, or 7·45 metres, at the Rhoda Nilometer is due to a fortunate conjunction of the two Niles.

If the rise of the Blue Nile be premature, it is clear that, although the same quantity of water will flow to the sea, the rise will be spent before the arrival of the White Nile waters, and the height attained will be insufficient. On the other hand, a delay in the rise of the Blue Nile, or a premature rise of the White Nile, would cause a too rapid conjunction of the waters, and an excessive and damaging flood would be the result.

To stay the too rapid rise of the one or the other Niles, so as to obtain a uniform height of 24 cubits as nearly as possible, such is the problem which M. Lamotte proposes to solve by the establishment at Gebel Silseleh of a gigantic barrage, of an auxiliary canal, and of basins of inundation on the two Niles similar to those in Upper Egypt. The analogy of this with Colonel Moncrieff's scheme for Lower Egypt is apparent.

The regulation of the overflow of the Nile is not the only benefit which M. Lamotte's project would confer upon Egypt. It is pointed out that Thebes, Memphis, and other great towns were flourishing in the time of the Romans, whilst within less than two hundred years they had ceased to exist. The sole or at least the most

* "Le Nil. Société des Études du Nil." Paris, 1882.

probable cause of this catastrophe is the breach, natural or artificial, of 150 feet only in the natural barrier of Semneh.

The Nile, in its course to the Mediterranean, has deposited in immense hollows, due to the violence of its waters, vast alluvial plains. As these plains were raised, and the natural dams were broken or worn too low, the inundations were less and less felt, and where no artificial help was forthcoming these plains became arid and desert.

A glance at the map of the Nile basin, and a section giving the elevation of the land and its monuments, as well as the level of the river, will show the state of the natural barriers of which we have been speaking. A succession of lakes will be noticed from the equator to Khartoum, of which some have become vast marshes during a great part of the year.

Formerly they were vast reservoirs serving to regulate the overflow of the river. M. Lamotte's scheme, as we have mentioned, contemplates the re-establishment of these reservoirs. He considers that at a low estimate the amount of cultivated land existing when these reservoirs were effective was as follows:—

	Acres.
At the confluence of the Nile	7,400,000
Between the Atbara, the most northerly tributary of the Nile, and the Blue Nile	17,300,000
Valley of Abou Doum	617,000
Djebel Barkal, Dongola, and Wady el Kab	4,900,000
Hannec	371,000
Dar Sukkat	371,000
Between Dar Sukkat and Wady Halfa	123,000
In Nubia more than	371,000
Between Assouan and Thebes	742,000
In Egypt proper from Thebes to the sea	5,400,000
Actual cultivated land	6,200,000
	43,795,000

Leaving on one side the enormous tracts of lands south of Wady Halfa, since it seems pretty certain that the immense and promising land of Northern Soudan is to return to barbarism, it is sufficient to say that M. Lamotte's scheme, if practicable, would double the cultivated area of Egypt.

With this I conclude the task I had set myself, of giving an impartial if imperfect account of the assets and liabilities of Egypt.

If I have succeeded in my efforts, I have made it clear that however great the necessities of the country and the claims upon it may be, its immediate resources are amply sufficient to meet them, whilst its latent resources are only limited by the efforts employed to bring them forth.

If we must moderate the tone of those who see in Egypt a

hitherto unexplored El Dorado, with riches to be had for the asking, we must likewise dismiss the jaundiced views of the theorists who speak of the country as a bankrupt and exhausted State, with a peasantry so overburdened with debt and taxation as to be incapable of regeneration.

The remedies necessary for restoring the financial equilibrium of Egypt are patent to all observers. The modification of the law of liquidation so as to prevent the premature repayment of debt whilst the State requires funds for its immediate needs; the maintenance in perfect condition of the present irrigation system, and its extension where possible without increasing the demands on forced labour; the parcelling out into moderate holdings of the gigantic Domains and Daïra estates which cannot be as profitably administered by a central board of directors; and finally the improvement of the methods of agriculture by supervision and example, such are some of the measures of most immediate urgency. Granted, however, that Oriental rulers can only govern on Oriental principles, the indispensable condition of any permanent reform in the country is its administration by a firm and energetic European power, with honest and capable servants at its disposal. Whether such administration be undertaken by one State, with singleness of aim and singleness of action, or by a partnership of the two great representatives of western civilisation, as before 1882, or finally, by an international board—a sort of political joint stock company—it is impossible to predict, but on the answer to this question depends in great measure the future of the country.

French engineers, generals, doctors, savants, and business men, men of science, and men of action, have shown the world for the last sixty years what could be done for the improvement of Egypt in the face of difficulties compared with which those of to-day are by no means insuperable. The example of the labourers of the first hour should surely be an encouragement to those of the eleventh.*

European capital, energy, and intelligence can nowhere find a fairer and more promising field than in Egypt; their mighty influence blessing

"Him that gives and him that receives,"

will eventually increase the prosperity and raise the intellectual level of the country, whilst enriching and ennobling those who will have borne the heat and burden of the day.

* In acknowledging the services rendered by Europeans to the cause of progress in the East, it would be unfair to overlook the labours—although of a humbler and more democratic nature—of the various Greek colonies in Egypt.

Discussion *on* Mr. Rabino's Paper.

Mr. Hyde Clarke said he hoped there were many present more conversant with the subject than he could profess to be, though it had naturally occupied a good deal of his attention and public duties. He rather wished to explain his own position than to apologise for it. He had been held accountable occasionally for some of the measures that had been taken in Egypt, they being presumed to be on his advice, whereas in reality any suggestions of his own had not been fully carried into effect, although in many cases those suggestions had been confirmed by experience so far as they were tried. The valuable paper which had been brought before them was one which showed the difficulties of a very difficult subject. It was evident that in the case of Egypt they had to deal first of all with geographical features, then with the characteristics of the population and institutions of the country, and then with European and Alexandrian opinion of conflicting nature. Mr. Rabino had put forward a proposition which was by no means generally accepted—that forced labour was absolutely necessary in Egypt. A careful consideration of the circumstances of the country, apart from theory, would, he thought, support and confirm Mr. Rabino's views. The very existence of the country, as shown in the latter part of the paper, depended upon the works of irrigation and the maintenance of the whole system of canals, dykes, and reservoirs, and he would add railways. The position of the country to a certain extent resembled that of Holland, where, instead of having to provide for irrigation, they had to provide against the effect of water in the injury and destruction of the country, and where the *corvée* system of forced labour existed, or labour rate, if they liked so to term it. Whenever there was any danger with the dykes, everybody must turn out, and the resources of the whole population must be applied. So too in the regions of the world infested with locusts, their extirpation was an enforced task. In Egypt, if it were left to the population, undoubtedly they would prefer forced labour, for the reasons stated by Mr. Rabino, in preference to what in some parts of Europe and America was adopted as the expedient of a higher state of advancement. It was true there were abuses attaching to forced labour; but in all those countries the population preferred payment in kind, either the payment of a tax or tithe in produce, or the payment of labour in preference to money. The reason was a simple one. Whenever money was required in a country of that kind, which was purely agricultural, it ultimately resolved itself into a question of borrowing from the local money lenders, or more properly, to use a term better understood, from the local usurers or extortioners. If the payments were made in money, there was also the opportunity for the Government officers to extort as when the contributions were made in kind. The population therefore preferred forced labour; they were used to it, and to its abuses, which were

customary, as it had existed from all time; and it was suited to the institutions, habits, prejudices, and necessities of the country. From the propositions that had been brought before them—the proposition of Rousseau Bey for instance—they saw the difficulty there was in the substitution of machinery, even where beneficial in other points of view, for forced labour. In all these questions, when they came to practical considerations, they had to look beyond pounds, shillings, and pence, to what were the requirements of the population which was to be governed. It was under all these circumstances that the Egyptian question assumed its difficulties. Then, again, it became complicated by the conflict of the different schools. They had, in Egypt more particularly, a conflict between what must be called the French schools and the English schools, and their several proceedings. Thus Mr. Rabino had given a certain amount of applause to the barrage, yet at the same time he told them that it had been a failure, and required to be reconstructed. When the question of Egyptian irrigation and restoration came to be considered, they found conflict between these schools. A Frenchman, brought in generally without any adequate experience, which could not in most of these cases be acquired in France, obtained the authority of the Government, set to work, and made a plan which was very ingenious. In that instance they had opposed to Rousseau Bey the opinion, not of a home engineer, who was no more experienced than a French engineer, but the experience of one of those men who had been concerned in the great water and irrigation works of India. They had too the practical knowledge of such men as Mr. Edward Easton and Mr. Fowler, who had successfully executed hydraulic works in Egypt. Therefore they had a conflict of opinions in all directions, which added to the difficulties of the candid inquirer in the decision of the question. Nevertheless, from Mr. Rabino's paper they could see that the real condition of Egypt was very different from what it had been so often represented of late. There could not be the smallest doubt that, political wants apart, and provided the country was not handed over by our Government to the Mahdi, Egypt was able to pay its way, that its resources not only remained unimpaired, but were capable of very material improvement under a better administration than had formerly or lately been applied to it. Mr. Rabino, like every one else, had considered it necessary to propose that European capital should be largely introduced into Egypt as a means of reducing the debt of the peasantry, and for other purposes of temporary and permanent improvement. What, however, did he propose on the other hand? He proposed, like the other counsellors, as a means of getting abundant and cheap capital that the obligations that had been already entered into with European investors should be tampered with. To him (Mr. Clarke) that had always appeared an inconsistency. It was perfectly possible by a stroke of the pen, as had been done already, to reduce the amount of capital borrowed from the saving classes of Europe, or to reduce the amount of interest; and it was very easy to call the unfortunate people usurers who had bought Egyptian stock from the late Khedive and the band of speculators with whom he was associated. What, however, they had to look at was not simply

a pecuniary amount, not simply the interest of the creditor, but the interest of Egypt itself in reference to its own credit, a prime element of its prosperity. There was no real reason, apart from any political events which might unhappily occur, for tampering with the claims of the English and the French creditors, or of creating a permanent reduction of obligations to meet any temporary emergency. There were resources for them, and there were many reasons why they should not be injuriously interfered with. He did not include among such expedients the tobacco *régie* mentioned by Mr. Rabino, which was a job for the benefit of French speculators as in Turkey, to the detriment of the population and the Government. If the Government wanted a *régie* they did not want a company, but, as in France, could furnish the working capital themselves. One essential measure for giving a future to Egypt was to insure for Egypt a credit which had been very materially injured by late events. Another thing which was connected with it was, as Mr. Rabino said, to provide for the wants of the cultivating population. In Egypt, of all countries, they were particularly dependent on the cultivating population. They had a very good picture of it in the British Museum. They could there see the population on the coasts (as he had no doubt Mr. Martin and many there had seen them) existing under the most unfavourable conditions during the greater part of the year; living during the winter on the herbiferous mud of the river and the coast—dependent on the wild fowl that they then caught, and in the summer time they were enabled to get from this mud abundant produce. There was no other population that could live there except themselves. There was no population, he believed, who would cultivate lower Egypt or upper Egypt as the industrious men and women of the fellaheen who dwelt there. It was therefore of the greatest importance that that population should be taken care of, but in a judicious manner, and he preferred food to schooling and lawyers. At the present moment, in consequence of the so-called improvements that had been introduced, the introduction of institutions totally unfitted to the population, the cultivators were in a worse position than they had been for years past. There were sufficient reasons for it. One of the improvements that had been introduced had been to alter the laws. The laws that were in the country were good enough of themselves, and only required adequate administration. An improved system, a more philosophic system, founded upon French law, had been introduced; and then, in order to have impartial judges, foreigners were sent for from the only country in Europe which had not a school of Arabic nor a school of Mussulman law. He referred to Belgium. Even if they had gone to Holland they could have done better; but whereas in this country, in France, in Russia, Germany, and Holland, there were schools of Mussulman law and schools of Arabic, and men trained in the administration of the law among Mussulmans, these Belgian and other foreign-speaking judges and the foreign system had been introduced. The consequence was that the foreign population who had been lending money at exorbitant rates to the natives, obtained decrees of sale against the peasantry. The land of the working

population was thus passing into the hands of this hated foreign population. That was one among many such evils that had to be checked. With regard to the calculation that Mr. Rabino had obtained from very good sources, it seemed to him that it was scarcely possible that the debt of the fellaheen could be only 5 millions, because 5 millions on 5 million feddans, even manipulated by Greek and Levantine adventurers, would hardly embarrass the population to the extent which they knew they were embarrassed. It was a debt in fact of about 1*l.* an acre. There were, however, so many considerations connected with the subject, and it was very difficult to deal with the subject without entering upon what some persons were pleased to call political questions. For himself, he believed Egypt had ceased to be a political question in this country in the sense of any party question, because it had become a national question. At the same time it had been handed over to the domain of theory instead of the domain of practice. He believed what he advocated some years ago was much better suited to meet the situation of that time. If they were to improve Egypt it must be by the application of experience, and not by the application of theory. At the time when the Dual Control was proposed, he suggested that the officials employed should be on the English side the Indian officials acquainted with the same institutions as those in Egypt, acquainted with the technology of the language, employed in official administration, and who would soon have got up their Arabic; and that the French officials should be taken from the Bureau d'Algérie, who were well acquainted with Arab finance, the Arabic language, and with Mussulman law. The persons who had been employed were very different. Something like his recommendation was, he believed, still applicable; and the simplest measure was to place Egypt under the Indian Government and the administration of the Bombay Presidency. There were many practical modes of dealing with the various questions raised, and he could only trust they would be better dealt with by others present who were more competent to deal with them than he himself was.

Professor Leone Levi said there were certain facts which were patent to anyone. The first fact was that the population of Egypt seemed to be more or less stagnant, there was no material progress. Discarding the unreliable estimate of 1800 and the uncertain result of the supposed census of 1882, we find that in 1846 the population was 4,463,000, and in 1876 5,250,000, or an increase of about 800,000 in 30 years, or little more than half per cent. per annum. There was therefore a comparatively stagnant population. In England the population increased from 16,200,000 in 1846, to 24,244,000 in 1876, showing an increase of 44 per cent. In Egypt the increase was 18 per cent. in the period if those figures could be trusted. Another important fact was this, that the value of production of Egypt was put down at 30,000,000*l.* a year, which, taking 5,000,000 of people, gave 6*l.* a head. It was unfair to compare Egypt with England, but in this country the production was 30*l.* a head. The products in Egypt were purely agricultural,

and as they depended upon the Nile they were exceedingly uncertain, varying from year to year enormously. Then they had another important fact, that with a production of 30,000,000*l.* there was an annual expenditure of 10,000,000*l.* At the very minimum that was 30 per cent., but in Great Britain the expenditure did not exceed 10 per cent. There was therefore an expenditure of 30 per cent. upon the products of the country, such products being extremely uncertain, such expenditure being extremely certain. As matters were presented in the paper, Egypt did not exhibit a very rich field for investment, and he very much pitied those who invested money in irrigation or other works there especially, as it was the catspaw of any State that wished to make it a field for political ambition.

Mr. William Miller said he could not suppose that the produce of Egypt was only at the rate of 6*l.* a head, seeing it should cost quite that amount to keep the population alive. As to the land tax levied to meet the government expenditure, it would be rather a good thing if they had something of the kind in England, as then they would be able to expend 30 per cent. of the public produce in making people happy and contented, and then the cry of outcast London and all that kind of thing would disappear.

Mr. George Hurst thought that the paper showed that Egypt was in a better condition than many people had imagined. In the beginning of the century the population was put at 2,000,000, and in 1882 it had increased to 6,556,000. That showed an enormous increase; and although their debt might be a serious affair, if they went on increasing at that rate they would have a greater number of people to pay off the incumbrance. They found also that this great increase had continued in spite of epidemics. Cholera had been very fatal, but it was found in this country that when it had been visited by epidemics the general mortality had not materially increased; they cleared off a great number of persons who would have died under other circumstances in consequence of weakly constitutions. Then again the Egyptians had had great wars and struggles of various kinds, but for all that the population went on gradually increasing. Another feature which seemed to show the prosperity of the country was this, that they not only produced sufficient of the necessaries of life for their own consumption, but they had a considerable quantity for exportation. On the other hand it did not appear that they were great consumers of the productions of other countries, and therefore they must increase in prosperity. If through their export trade money was brought into the country, that money must circulate, and in some way would go on gradually improving the condition of the people. He thought the future of Egypt was not so gloomy as many seemed to imagine; its difficulties must shortly pass away, and they might expect that when it became fairly settled down it would go on improving. With regard to forced labour it would perhaps be impossible to get rid of it all at once, for any attempts to do so would probably increase the misery of the country to a very

great extent. The people, while labour was compulsory, must be maintained, but if entire freedom was given it would be questionable whether they could obtain remunerative employment. Under those circumstances perhaps forced labour for the present might be an absolute necessity, but as the condition of the country improved they would be able to dispense with it.

Mr. Moncreiff Paul said the remarks made by the last speaker induced him to call attention to the fact that the table showing an estimate of the increase of population was derived from a variety of sources, and therefore it was not fair to compare the returns for 1800, and so on up to 1882, because they were not drawn from the same source. The return of 1800 was taken from the estimates of the savants who accompanied the French expedition. Their method of computation need not necessarily be at all analogous to the computations which followed, and therefore it was mere guess work to say that the population of Egypt had increased from 2 millions at the commencement of the present century, to $6\frac{1}{2}$ millions in the year 1882. And even assuming that those figures were fairly correct, the rate of increase was nothing like the increase found in this country. Mr. Rabino, speaking of the rate of interest, said, "I find by the *Economist* that the banks in Australia, who I suppose are the cheapest lenders, get 9 per cent. for their money." Nine per cent. for money on mortgage in Australia had not been known for a long time. That 9 per cent. spoken of in the *Economist* was the rate charged by the banks upon clean over drafts without any security whatever; but that was not the class of interest that Mr. Rabino was dealing with. He was speaking of mortgages, and the rate of that class of security was between 7 and 8 per cent. in Australia.

The Chairman, Sir Rawson W. Rawson, said he regretted the absence of their President, who in previous years had turned his attention to this subject, and might have been able to give them some useful information upon the question. He (Sir Rawson Rawson) had been unexpectedly called upon to take the chair. He had not previously seen the paper, and therefore did not feel himself competent to add to their information upon it; but he would request them whilst inviting their thanks to Mr. Rabino for his very valuable compilation, to be guarded in giving credit to the figures which he had presented upon the best authority he had been able to obtain, and which were subject to very many qualifications and modifications, having been prepared from different sources and by different individuals. At the same time they were of excessive value at the present time when Egypt was occupying their attention so greatly, and he might congratulate the Society upon being able to offer to the public information thus brought down to the latest period. He had listened with great interest to what Mr. Hyde Clarke said. He had lived a good deal in colonies where the *corvée* system had existed, and could not but believe that under proper management it was acceptable to a people in the same position as the Egyptians of the present day; but it required a just

and a tight hand to make it so. Of course as the means of the people advanced and civilization spread, they would be glad to be emancipated from that condition, but at present a man of this class would rather give a week's work than its worth in money, and it would be easier for him to give the one than the other. Under the frightful system which had prevailed in Egypt there could be no doubt that the *corvée* system had been an abominable thing, and it was not surprising that the population had not advanced while it existed. The *corvée* system there had not been as it was in the English colonies, where the men had to work in their own neighbourhood and for their own benefit, and could appreciate the results of their own work. In Egypt unfortunate men by hundreds had been transported from one part of the country to another, and employed upon works in which they had no interest, the benefits of which they could not understand, and had been treated with utter neglect during the period of their employment. Such a *corvée* system could not but result in the greatest misery and mischief to the country in which it existed, and therefore he hoped that under an enlightened administration this system, if continued, would become something very different from what it had hitherto been. With regard to the remarks of Professor Leone Levi, it was very difficult to judge from this paper what the future of Egypt might be. He was inclined to lean to the conclusion that under an enlightened and just administration the prospect was a favourable one. Egypt appeared to have the elements of wealth and prosperity; but these would not be developed if the country was left to the administration of an ignorant and despotic Government, and one that showed an utter indifference to the welfare of the people, as had been the case hitherto. He was sure they would all join with him in offering their thanks to Mr. Rabino for his paper.

Postscript by Mr. J. Rabino *in Reply to the Discussion.*

Not having had the good fortune to assist at this interesting discussion, I beg the editor's leave to answer very briefly some of the objections raised.

In reply to Mr. Hyde Clarke, the whole tenor of the paper is opposed to a reduction of the bondholders' dividends, but I have tried to prove that the law of liquidation enacted under very different circumstances from the present, hampers the State unfairly, and I think no economist would recommend the Egyptian Government to maintain its credit by repurchasing and cancelling unified stock by means of loans simultaneously contracted.

The Régie de Tabac it was always intended to grant to the highest bidder, and it ought therefore to be as likely to fall into English as French hands.

The debt of the fellaheen concerns Lower Egypt only, and therefore rests on 2,800,000 and not on 5,000,000 feddans. As the peasants are paying neither capital nor interest just now, and land

is not easily saleable, the debt may be looked upon for the moment rather in the light of a sentimental grievance. What however is a genuine misfortune, both to the fellaheen and the country generally, is the stoppage of credit due to the political uncertainty of the last two years. The refusal of Europeans to lend money even at 10, 15, or 20 per cent., forces those who must have loans to borrow from natives at 30, 40, or 50.

Professor Leone Levi rightly questions the estimate of 2,000,000 as the population of Egypt in 1800. It can only be looked upon as a more or less happy guess, but is useful as giving the impression of trained observers at the beginning of the century. I fail to apprehend however why Professor Levi accepts the estimate, an estimate only of 1875, whilst summarily dismissing the census of 1882, carried out under the auspices of Sir Auckland Colvin, and given by the Government as substantially correct, although of course not to be compared with the scientific accuracy of the publications of our English Registrar General. There is nothing surprising in a great increase of population in a country where marriages are so early that a grandmother of 29 is not out of the common, and food is so plentiful that, I am assured, no death by starvation has been heard of within living memory. This partly answers Mr. Miller. Mere food is so cheap, and the wants of the natives so small, that my estimate, low as it may appear, has been contested here as too large. I have since seen another estimate which agrees with mine, though drawn up from different premises.

I accept Mr. Moncreiff Paul's correction as to the interest in Australia, remarking that I wished merely to point out that rates of interest vary with latitude and longitude: that high rates prevail elsewhere than in Egypt, and that we must not compare an Eastern State with the cheapest money market in the world.

In conclusion, I beg to thank Sir Rawson Rawson, the various speakers and the members present, for the kind reception given to my paper, and to express the hope that it may be a starting point for a collection of statistics and observations by more competent writers on a subject which must long be of great interest to England.

"*The* General Statistics *of the* British Empire." *The* Address *of the* President *of* Section F, "Economic Science *and* Statistics," *of the* British Association *at the* Fifty-Fourth Meeting, *held at* Montreal, *in* August, 1884. *By* Sir Richard Temple, Bart., G.C.S.I., C.I.E., D.C.L., LL.D.

The subject chosen for this address is that of the General Statistics of the British Empire. It will, I hope, be deemed appropriate for the meeting, which is held in one of the fairest colonies which this empire contains. Though statistics are fallible, yet the collation and presentation of them must be regarded as essential to political and economic knowledge. Indeed they are, figuratively, the backbone of information, and without them our knowledge would be invertebrate. Owing to the variety of sources from which the facts have to be drawn for an empire that is spread over the world, and owing to the magnitude of the figures which have to be produced, it will frequently be necessary to state the totals approximately and in round numbers. Again, owing to the largeness of the subject and the limitation of space, it will be impossible to do more than state the principal facts in the form of an abstract.

Our statistics then will be grouped under the following headings:—

I. The area, consisting of widely extended regions.
II. The inhabitants of these many lands.
III. The works of man as they are displayed in this vast theatre of action.

First, then, the area of the British Empire may be set down at 8,650,000, or more than $8\frac{1}{2}$ millions of square miles. This area includes the countries which are directly recognised as the component parts of the empire in Europe, in the East and West Indies, in Australia, in North America, in South Africa, and the possessions scattered among nearly all the regions in the world. Out of this total there are only 120,000 square miles in the United Kingdom. Then there are $1\frac{1}{2}$ millions of square miles in India, and the remainder, or 7 millions, belong to the colonies and to the scattered possessions.

But there are other regions which, though not belonging to the empire, have yet fallen, or are falling, under its political control more or less, such as Egypt, including a part of the Egyptian Soudan, some districts in Southern Arabia, a part of Borneo, Zulu-

land, the Transvaal, Afghanistan, and Beluchistan. The area of these additional regions may be set down approximately at 1,103,000, or about 1 million of square miles, and this figure is probably somewhat below the reality. Thus the total area, directly or indirectly under the authority of the British Empire, may be taken at nearly 10 millions of square miles, or about one-fifth of the 50 millions of square miles composing the habitable globe.

The dimensions of this imperial area have been ascertained by professional surveys, of which the progress has kept pace with the expansion of the empire. Out of the grand total not less than $2\frac{1}{2}$ millions of square miles have been topographically surveyed, and of this nearly all has been surveyed minutely field by field. This cadastral survey, presenting the details of every field for a vast area, is to be reckoned among the largest operations ever known in the annals of administration. The remainder has been (for the most part) either partially surveyed or partially explored. A small portion, however, remains but imperfectly explored, or else almost unexplored.

As might be expected in an empire whereof the real basis of power is maritime, the coast line is of an extraordinary length, to be measured by about 28,500 miles, with forty-eight large harbours; for the whole of this length marine surveys have been prepared.

In an empire which lies on both sides of the equator, and is scattered over both hemispheres, there are varieties of climate touching the extremes of heat and cold. Of the whole about one-sixth is within the tropics, one-third in the antipodes, one-third in North America, and the remaining one-sixth in the temperate zone of Europe and Asia.

But greatness does not depend on area alone, and there is a vast range in the scale of value for lands. For instance, it has been computed that the average letting value of land in the interior of England is several hundred times as great as that in the interior of Siberia. So in the British Empire there are wide tracts which may be important politically and prospectively, but of which the value cannot be measured by a statistical test. Out of the 10 millions of square miles, hardly one-fifth is cultivated or occupied in the widest use of the term occupation. The area, however, which is capable of being brought under cultivation, and of sustaining the future increase of population, must be regarded as enormous. It is chiefly in Australia and Canada, in which two divisions it may be reckoned at upwards of 2 millions of square miles, enough at the lowest computation to support 200 millions of souls. Even in India, which is popularly, though not quite correctly, supposed to be thickly populated, the cultivable waste is not less than a quarter of a million of square miles. Then there is a residue which is

uncultivable waste, and of which the dimensions cannot be precisely measured. It consists of mountains and forests, with some desert, in the heart of Australia. These mountains are among the greatest ranges in the world. The forests are very extensive, and their extent cannot be precisely stated. They are infinitely various both in respect of value and of condition: some being poor or half destroyed, others being rich and well preserved. But there are in the empire about 100,000 square miles of forests which are being formally and professionally preserved, to become a mighty source of national wealth.

In the second place, respecting the inhabitants, the total population amounts to 305 millions of souls in those regions which are included directly in the empire. If the countries already mentioned as more or less under political control were to be included, then about 10 millions more would have to be added, bringing up the total to 315 millions.

This mass of humanity is composed of many diverse nationalities, among whom the primary distinction is that of race. There are 45 millions of the fair races; among these about 39 millions are Anglo-Saxons, including German colonists. Three and a half millions are Celtic (mainly Irish), $1\frac{1}{2}$ million are French Canadians, half a million are Dutch in South Africa; and there are a certain number belonging to other nationalities, Scandinavians, Swiss, Greeks; but there are few from the Latin race in the South of Europe, and hardly any Russians.

Again, of the 315 millions, ethnically there are 45 millions of the fair or Caucasian race, 254 of the Aryan, and 5 of the Mongolian, the remainder belonging to aboriginal races.

A cardinal distinction between the several nationalities is that of religion. Christianity, the religion of the dominant race, is professed by somewhat more than the 45 millions of the fair races above mentioned, but the total can hardly exceed 46 millions out of the 315 millions, that is, one-seventh of the whole. The religion which includes the largest number is Hinduism. There are 188 millions of Hindus, and it may indeed be said that the whole of the Hindu race is subject to the British crown. The Hindus then form more than a half of the total population in the empire. Under the generic name of Hindu, however, there are counted many thousands of Brahmos, who are really Theists, and there are 3 millions of Sikhs and Jains, closely connected with Hinduism.

Then there are 50 millions of Muhammadans under the British crown in India, and there are 10 millions more in Muhammadan countries connected with the British empire: in all 60 millions. This number exceeds the number of the Muhammadans belonging

to any of the Muhammadan States, such as Turkey, or Persia, and in fact comprises half the Muhammadan world.

The number of Buddhists is not considerable, amounting to about 7 millions, chiefly in Burmah and Ceylon, with some Chinese in Australia and other divisions of the empire. Then there is a small remainder, about 7 millions, consisting of pagans chiefly, the aborigines of the East Indies, including also the North American Indians, the Australasian natives, and the African tribes of the Cape.

In the United Kingdom the proportion of urban to rural population is large, being more than one-half already, and likely to increase to two-thirds. In England especially the majority of the people dwell in towns. At present a similar tendency is observable in Australia, where the people are mainly urban. But in the rest of the empire the mass of the population is rural, a certain percentage only being urban. In India especially it is to be remarked that nine-tenths of the people are in villages, leaving one-tenth only for the towns.

If the total population were spread over the total area of the empire, the average would amount to only 33 persons to the square mile, which suggests a wonderful sparseness of population in a wealthy and prosperous empire. The sparseness arises from the inclusion in the empire of tracts, either uninhabited or but slightly inhabited, such as the Himalayas, the frigid regions in the north of Canada, a part of the Rocky Mountains, and the arid desert in the heart of Australia. Indeed it were almost idle to reckon the average of the population in the total area in the dominion of Canada, or in Australia. Even in India the general average amounts to only 184 to the square mile; nevertheless India contains some of the most densely peopled districts in the world. In some Indian provinces a population to be counted by tens of millions average from 300 to 400 the square mile, and in some Indian districts, with a population to be counted by some millions, the average number rises to 800, even to 900 on the square mile. As is well known, England (as separate from Wales, Scotland, and Ireland) is the only part of the empire which is densely peopled throughout, its average per square mile, 485 souls, being almost exactly the same as that of Belgium, the most densely peopled part of the continent of Europe.

Heretofore under the first two headings we may have wondered at the smallness of the proportion which the United Kingdom bears to the empire in respect of area and population. Under the next or third heading we shall be constrained to admire the largeness of the proportion of the United Kingdom bears to the empire in respect of wealth, commerce, and resources. The third and last

heading then relates to the works of man, his riches and power, his industrial and commercial operations.

One among the primary tests of national resources is the public revenue.

The annual revenue and receipts collected in the British empire for the general government or administration amounts to 203 millions sterling annually. Of this mighty sum, 89 millions pertain to the United Kingdom, 74 millions to India, and 40 millions to the colonies and the dependencies. This includes British territories only, and not the native States of India, nor the countries politically connected with the empire. If that could be added, however, the addition would not be very material to so great a total as that above shown.

The revenue which is raised indirectly from the consumer is less felt than that which is levied directly from the taxpayer. It may therefore be well to observe that of the 203 millions not more than one-fourth (or 50 millions) is obtained from direct taxation, land tax, property tax, and the like, the remainder being obtained from customs, excise, and other sources of indirect taxation.

But besides the general government and administration, there is a large revenue received throughout the empire for local purposes. This income (including various receipts but excluding loans) amounts to hardly less than 61 millions sterling yearly, of which 49,500,000*l.* belong to the United Kingdom, and 5 millions to India; the greater part of this is levied by direct taxation.

Inasmuch as the payer feels the payment whether the money be applied to general or to local purposes, it is but just to add together the two great heads of imperial and local revenue. Thus the total of 203 and 61 millions amounts to 264 millions sterling annually, truly an amazing amount at first sight, the like of which has never yet been imagined. Still the sum is not apparently high for the total population, amounting to 1*l.* 5*s.* 4*d.* per head per annum.* But the average incidence varies greatly, being 4*l.* 7*s.* 5*d.* per head in the United Kingdom, 2*l.* 14*s.* 1*d.* per head in the colonies and dependencies, and only 7*s.* 11*d.* in India.

Another test of power relates to the provision for external defence and internal protection—in other words, to armies, auxiliary forces, and organised police, to navies and marine.

Now the men trained to arms in the British empire may be stated at 850,000, including the regular British forces at home and abroad, the militia, and volunteers in the United Kingdom and in the colonies, the British native forces in India and other countries. This includes 10,000 Egyptian troops under a British general, but

* This ratio includes the British subjects only, and not the native States under British control.

excludes the forces of the native States of India, and of the other countries politically connected with the empire. If however the forces of the native States of India were to be added (and they are generally available for imperial purposes), then the total of 850,000 would be raised to nearly a million.

Thus the men under arms, or effectively trained to arms, are in number more than three-quarters of a million, and under the last-named computation would amount to nearly a million. The number represents those who are really serving, or who are in receipt of allowances, or are actually called out from time to time—and not those who are liable to be summoned in event of emergency. This actual total will bear comparison numerically with the standing armies of the martial empires now in the world, though there may be an important difference in respect to military organisation. But the total is very small in comparison with the size of the British empire, representing only one soldier to every 10 square miles and to every 376 of the population. Thus the military forces of the British empire, taken at the outside figure, are much smaller relatively to the territory and the people than those of any other great State, excepting only the United States of America. There remains, too, the cardinal fact that the British military forces are raised entirely by voluntary enlistment, a circumstance almost unique in the military arrangements of the present age.

Of the total strength, 850,000, about 150,000 are soldiers of the dark or coloured races, and the remainder, or 700,000, are of the fair or dominant race. But if the total of a million be taken, then it may be said that 300,000 are of the dark races, and 700,000 of the fair or dominant race. These proportions are satisfactory in respect to the safety of the empire.

The defensive armaments of the empire by sea and land cost 41 millions sterling annually, or 20 per cent. of the total of revenue and receipts, which proportion is less than that shown by any great State in the world, except the United States. If the expenditure be compared with the whole population of the empire, then it amounts to less than 4*s.* a head, which (always with the exception of the United States) is the cheapest rate to be found in any great State of the world.

Subsidiary to external defence is that internal protection which a police force secures. Now the police force of the British Empire, metropolitan, municipal, and rural together, is in numbers about 210,000. Of this total, 51,000 are in the United Kingdom, and 147,000 in India, the remainder being in the colonies and dependencies. It may be a question whether there should be added to this total the number of village police in India, who are paid

not by the State, but by village cesses, and who are legally recognised. Their number is not exactly known, but is not less than 350,000, and this addition would bring the grand total of the police for the empire up to 560,000.

Thus we have for the whole empire an average of 1 policeman to every 571 of the people, and to every 16 square miles.

It is never to be forgotten that one of the main reasons why the British empire is able to keep its land forces at a comparatively low scale, is its preponderance at sea. Owing to the astonishing difference of power between the different kinds of ships, and in the preparedness of ships to put to sea and fight, the difficulty of exhibiting the strength of a navy by figures is becoming greater and greater.

The predominance which we hope to find in the British navy will hardly be shown by the enumeration of ships. With this caution, however, it may be stated that there are 246 British war vessels afloat, or in commission, of which 72 are sailing ships and 174 have steam power. There are now 63 ironclads, either complete or nearly complete. The number of officers and men amounts to 57,000. The number of ironclads ready for action at the shortest notice is now 44, of which 25 are at sea. These facts will probably be found to indicate a naval preparedness fit to cope with such foreign combinations as could reasonably be anticipated.

In respect to mercantile shipping a statistical exposition is more applicable. The British merchant navy consists of 30,000 ships, with $8\frac{1}{2}$ millions of tons, manned by 270,000 sailors. The seagoing tonnage under the British flag amounts to 3 millions of tons in steamers and $5\frac{1}{2}$ millions of tons in sailing vessels. Now under the flags of other nations there are $2\frac{1}{2}$ millions of tons in steamers and $9\frac{1}{2}$ millions in sailing vessels. In other words, the British Empire surpasses all other nations together in respect of steamers, and nearly equals them in respect of sailing vessels. In respect of carrying power in the world by sea, 49 per cent. belongs to the British empire, and 51 per cent. to other nations. Again, out of 55,000 ships in the world over 100 tons, 21,000 are British. The comparison remains in similar terms in respect to the earnings of shipping. Out of 129 millions of tons carried yearly by the shipping of the world, 63 millions are under the British flag. Out of 133 million pounds sterling earned from freight and passengers by the ships of the world, 73 millions are earned by British ships. A similar proportion is shown by the port entries of the world, represented yearly by 125,000 tons, of which 57,000 (or nearly half) pertain to the British empire.

In shipbuilding the proportion is still more favourable to the

British empire. Out of 1,800,000 tons built annually, 1,200,000 are built in Great Britain.

The total trade of the British empire cannot be exhibited statistically, because the component parts of the empire are separated by oceans. Consequently much of the trade is between these parts, and it would be meaningless to sum up the several items into one grand total.

Still it is well to summarise the separate items, each of which is a mighty factor in the prosperity of the empire. As is well known, then, the United Kingdom in 1882 exported 241 millions sterling worth of British produce with 65 millions worth of foreign and colonial produce, and imported 413 millions; the total value of the trade being thus 719 millions sterling. The ocean-borne trade of India is valued at 143 millions sterling annually, that of the colonies and dependencies amounts to 302 millions; truly an astonishing amount in comparison with their population.

If the aliquot parts of the trade of the principal nations be computed, then about one-fifth, or 21 per cent. of the whole, belongs to the United Kingdom, and 13 per cent. to the colonies and dependencies. Thus 34 per cent., or one-third of the world's commerce, pertains to the British empire.

The ratio of sea-borne commerce per inhabitant yearly is 20*l.* in the United Kingdom, 31*l.* in Australia, 9*l.* in Canada, and 6*l.* in the United States. In Europe the British ratio is exceeded in Holland and equalled by Belgium, but in other European countries the ratio is far less.

In respect to banking, the United Kingdom is known to be the busiest on earth, and transacts one-third of the business of the world. The total of capital and deposits used in the banking of all nations amounts to 2,508 millions sterling, of which no less than 965 millions belong to the British empire, representing a proportion of 39 per cent. But there is a considerable amount of capital employed by the native bankers of India, amounting to many millions sterling, of which the sum cannot be precisely stated. On the whole it seems that considerably more than one-third of the banking business of the world is done within the British empire. The same proportion is shown by the sum total of capital and deposits of the banks. From this it follows that the average per inhabitant in the United Kingdom is 25*l.*, the average for the continent of Europe being 4*l.*, and that of the United States being 10*l.* The only country to be compared with the United Kingdom is Australia, where the average is 30*l.*

The manufactures of the United Kingdom are valued at 818 millions sterling annually. Those of the colonies are estimated at 59 millions. The value of the Indian manufactures cannot be

stated, but must be large. The significance of this will be understood from the fact that a similar total for the rest of Europe gives 2,600 millions. In general terms it may be stated that British manufactures form one-third of those for all Europe put together. The great competitor is of course the United States, where the value appears to exceed that of the United Kingdom. The American manufactures are indeed wonderful, not only in their present magnitude, but in the rapidity of their progress, and in the prospect of their extension. Still it is difficult to institute a precise comparison, because some items are included in their total which are not reckoned in the United Kingdom.

Another test is that of factory steam power; this power in the world is represented by $7\frac{1}{2}$ millions of horse power. Of that total, $2\frac{1}{4}$ millions, or about 30 per cent., are British.

Again, it has been computed that if the main elements of national industry be taken together, namely, commerce, manufactures, mining, agriculture, carrying trade, and banking, the total, 2,000 millions sterling and upwards annually, is about the same for the United Kingdom and the United States.* But the United States are advancing the fastest, and are already passing ahead. Their population, however—55 millions of souls—is greater by 19 millions than the British 36 millions. The aggregate of industries shows an average of 51*l.* per head in the United Kingdom, against 42*l.* in the United States. The fact, then, that the United Kingdom, despite disparity of population, is still able to do nearly as much as its giant offspring, affords striking proof of sustained vitality in the mother country.

It is inferrible from this computation that the average of earnings per head in the United Kingdom is 35*l.* 4*s.*, and exceeds that in the United States (27*l.* 4*s.*) and that in Canada (26*l.* 18*s.*). But it is actually exceeded by the average in Australia, which reaches apparently the amount of 43*l.* 4*s.* per head, and is the highest in the world. Still the rate of earnings in the new countries founded by the Anglo-Saxon race approximates to that of the mother land, but the average rate for the continent of Europe is only 18*l.* 1*s.* In other words, the British rate is more than double. France is the only large European country which at all approaches the United Kingdom in this respect, and together with France may be classed the little countries of Belgium, Holland, and Denmark.

It follows from these facts that the wealth of the United Kingdom in land, cattle, railways, and public works, houses and furniture, merchandise, bullion, shipping, and sundries, valued at

* See Mulhall's "Balance Sheet of the World," and "Dictionary of Statistics." These figures have been largely adopted in the American Census Report of 1880.

8,720 millions sterling, exceeds that of any European State, and is just double that of Russia. But it is exceeded by the corresponding figure for the United States, namely, 9,495 millions sterling.*

For the British empire, however, must be added 1,240 millions for Canada and Australia, precisely computed on similar terms; and at least 2,500 millions for India, and other dependencies which cannot be precisely computed, and which may be below the reality. Thus the wealth of the British empire apparently stands at the truly grand total of 12,460 millions sterling; which justifies the old expression that this empire is the richest State on the face of the earth.

But the preponderance in this respect is not nearly so great as might be expected from the numbers of the population. The cause is this, that in one large section, India, the earnings and the value of labour are very much less than in Europe and North America.

The 8,720 millions of British wealth represent a sum seven times the annual income, namely, 1,247 millions, which seems to be a fair calculation. According to this the British people can earn 14 per cent. on their capital, which rate is about the same as that of the United States. It exceeds the corresponding ratio on the continent of Europe. But it is considerably surpassed by the ratios in Canada and Australia—18 and 22 per cent. respectively.

The construction of public works is a test of national progress; those works which may here be selected for mention are railways, electric telegraphs, and canals.

For the British empire there are 38,000 miles of railway open, of which 18,000 miles are in the United Kingdom, and 20,000 miles in India and the colonies. For the area and population of the empire this figure is not remarkable, inasmuch as in the world there are about 260,000 miles, of which the British empire has only one-sixth. It is an astonishing fact that in the United States alone there are nearly 115,000 miles, more than double and nearly three times the mileage of the whole British empire.

The extent of railways in proportion to population is larger in the United Kingdom than in any other part of Europe, but is much smaller than in the colonies and in the United States. While there are 520 miles to every million of inhabitants in the United Kingdom, there are 1,920 in Australia, and 1,780 in Canada; but even the colonial proportion is overtopped in the United States, where the corresponding number is 2,106. But if the test of the value of railways be the amount of work done by them in proportion to their mileage, then in this respect no railways in the world

* See "Contemporary Review," December, 1881, and "British Association "Report," 1883, p. 624. This figure is the most recent, but the amount has sometimes been put as high as 10,000 millions.

equal the British. The average earnings per mile of a railway in the United States is 1,440*l.* In India the average of earnings (1,330*l.*) is about the same; in Australia (1,075*l.*) it is lower; and in Canada (790*l.*) it is still less. But in the United Kingdom it is more than double, being 3,800*l.* In the United Kingdom 18,000 miles of railway earn 69 millions sterling annually; in the United States 100,000 miles of railway earn only 136 millions. The general maximum speed of trains in the United Kingdom and the total mileage run by express trains are considerably greater in the United Kingdom than in any other country.

It has been computed, by adding together the number of passengers and of tons carried, that 46 per cent. of the railway traffic of the world is done by the railways of the British empire. In abatement of this, however, it should be added that the distances run in the United Kingdom are less than on the continent of Europe, and still less than in the United States.

Regarding electric telegraphs on land there are 86,000 miles in the British empire, or nearly one-fifth of the sum total for the world. It is remarkable that the telegraphs in Australia—26,000 miles—are exactly equal to those in the United Kingdom. But in illustration of the difference between an old and a new country there are 31 millions of messages yearly in the United Kingdom, and only 5 millions in Australia. In other words, the telegraph does six times as much in the old country as in the new. Similarly in the United States the length of telegraph—121,000 miles—is amazing, but the messages are only 34 millions, just in excess of those in the United Kingdom. In other words, the work is more than four times as heavy in the United Kingdom in comparison with the United States. Besides the land telegraphs, there are submarine cables in the world with the surprising length of 105,000 miles. Of these the greater part belong to the British empire.

In regard to canals of navigation, there are about 6,000 miles in the British empire. The significance of this will be appreciated by recollecting that for the world the total length is set down at 23,000 miles. Thus one-fourth out of the world's total is British. But in these figures there are not included the channels of irrigation in India, of which the length exceeds 20,000 miles. Of this length one-fourth consists of canals remarkable for their size.

After this review of material power, we may summarise the public debt of the British empire. In this the first item is the regular debt of the government, amounting to 769 millions sterling for the United Kingdom, and 293 millions for India and the colonies, in all 1,062 millions. The amount seems enormous, but, happily, we may doubt whether it is excessive for so great an

empire as the British. The amount is equal to five times what we have seen to be the annual revenue and receipts. It is computed to represent only 9 per cent. of the capital wealth of the empire.

The interest payable on it amounts to 41 millions, or 20 per cent. on the income of the government. If the income of the population of the empire be taken into account, and it can hardly be computed at less than 1,700 millions sterling, then this interest on the debt will represent only a minute fraction.

Besides this debt of the Government there are the local and municipal debts, contracted for the sake of material improvement. These debts amount to 153 millions for the United Kingdom, and certain amounts for India, which may bring up the total to 160 millions. To this should be added 90 millions raised on a government guarantee for some of the railways in India.

Thus we reach a total of 1,312 millions for the public debt, government and municipal, for the British empire.

A part of the government debt raised in India is for State railways and canals, this part amounts to 40 millions sterling.

But in these figures there are not included the 187 millions sterling raised by companies for railways in the United Kingdom.

The subject of crime cannot be treated completely in this summary, but it may be stated that in the empire 675,000 persons are convicted annually of crime, of which number more than nineteen-twentieths pertain to India. This number amounts to two in a thousand of the total population, which represents a moderate proportion.

The total number of persons in the prisons is about 145,000, of which 31,000 belong to the United Kingdom and 103,000 to India. In the former the number represents less than one in a thousand of the population, and in the latter only one in two thousand.

In the United Kingdom it is remarkable that within the last fifteen years, that is between 1868 and 1882, the annual number of convictions in England fell from 15,033 to 11,699, and in Scotland from 2,490 to 1,944, notwithstanding the increase in population, indicating a satisfactory decrease in crime. The number of crimes reported approximates to that of convictions.

Two cognate matters must be mentioned in illustration of the condition of the people, namely, emigration and pauperism.

During the last century $8\frac{1}{2}$ millions of persons have emigrated from the United Kingdom, representing from 5 to 7 per cent. of the population. Out of this number 3 millions went to the colonies, and $5\frac{1}{2}$ millions to the United States. But this does not represent the total of arrivals in the colonies, for during this time 650,000 went there from the continent of Europe.

There has also been a considerable emigration from India within the last ten years, 190,000 natives having left their country to found new Indias in the tropical regions of the British empire.

In the older countries, like the United Kingdom, pauperism is an evil and a sorrow from which younger communities are as yet exempt, and which has never existed in the East. In India there is no poor law, and there are none who come under the technical designation of paupers; the destitute and infirm in that country are relieved by private charity without State intervention. Moreover, the unprecedented measures of relief undertaken by the government during the recent famines have not at all pauperised the population. Nevertheless, the number of paupers under relief in the United Kingdom must be stated at 1 million, or rather less than one-thirtieth part of the population. The cost of their maintenance amounts to 10 millions sterling annually, and this notwithstanding the extensive emigration which has just been summarised. But during the last generation the number has fallen from $1\frac{1}{3}$ million to 1 million, while the expenditure has risen from 7 to 10 millions. Still, owing to increase of wealth, the burden is computed to have fallen from 3*d.* to 2*d.* in the pound of the national income.

I shall conclude this statistical summary by adverting to a group of subjects into which moral considerations largely enter, namely, thrift and education.

The savings banks in the British empire have 90 millions sterling of deposits and about $5\frac{1}{2}$ millions of depositors, of which numbers eight-tenths are in the United Kingdom, and the remainder in India and the colonies. The amount, though absolutely great, is not extraordinary for so wide an empire.* The amount of 80 millions for the United Kingdom compares moderately well with the total amount for the continent of Europe, namely 338 millions, but unfavourably with Germany and with some thrifty little nations like Switzerland or Scandinavia. The comparison is still more unfavourable in respect to the United States, where the savings have risen to the noble sum of 202 millions. On the other hand, the development in the British empire of friendly societies (including provident building and registered societies) has been wonderful. The registered societies in the United Kingdom are 18,200 in number, have 5,800,000 members, and 56 millions sterling of funds. There are also many unregistered societies, of which the statistics are unknown; the addition of these would, it is believed, bring up the total to 7 millions of members, or one-fifth of the population. In Australia there are 880 such societies, with

* In some of the colonies there appears to be some difficulty in discriminating the savings banks depositors from ordinary depositors.

55,000 members, and nearly a million sterling of funds. In Canada there are 40 societies, with 80,000 members, and more than 5 millions sterling of funds. The average of funds per member is 9*l.* in the United Kingdom and 13*l.* in Australia, but in Canada it is very high, being 63*l.*

The amount of life insurance, 423 millions sterling of policies in the United Kingdom, exceeds that of any other country, but hardly exists at all in India. But of fire insurance the amount in the United Kingdom is not remarkable.

The charitable expenditure in the British empire can hardly be stated in full, but it is enormous. In the United Kingdom it amounts to more than 10 millions sterling annually, the income equalling this honourable sum. Of this income about one-fourth is derived from endowments consisting of real and personal property.

The number of indoor patients (irrespective of those who receive outdoor relief) in the charitable hospitals of the empire is not less than 450,000, of whom 145,000 belong to the United Kingdom, and 270,000 to India. This number is not remarkable in comparison with other nations. The fact is that in the United Kingdom the poor-law organisation provides for many who would otherwise be in hospital.

In regard to the post office, the letters posted annually in the world are returned at 5,200 millions; of this total there are 1,500 millions, or 34 per cent., in the British empire. This is a smaller proportion than might be expected, the cause being that letter writing is still in its infancy in India. But in the United Kingdom the average of letters per inhabitant is greater than in any other country.

Respecting education, there are 5,250,000 pupils at schools in the United Kingdom, 860,000 in Canada, 611,000 in Australia, and 2,200,000 in India, making up a total of 8,921,000 pupils in the British empire. The number, though large absolutely, appears very small for so vast a population. The fact is, that in India, although education has made a remarkable progress within the last generation, yet the lee-way to be made up was enormous, owing to the neglect of many centuries, and many children of a school-going age still remained out of school. The number in the United Kingdom compares moderately well with the continent of Europe, but unfavourably with some of the lesser kingdoms, where the progress is most satisfactory. But the comparison attains special interest when made with the United States, where a truly noble progress is exhibited, and where the number of pupils reaches to 10 millions, the annual expenditure being 17 millions sterling. Doubtless the returns in the United States are more

complete for the higher branches of education than in the United Kingdom, but that would not make any considerable difference in the comparison of such high figures as these. Thus the extraordinary fact remains, that in respect of educational statistics the United States are numerically in advance of even the British empire.

The religious missions to non-Christian nationalities constitute a bright feature in the British empire. The statistics of the Roman Catholic missions are not fully known, but their operations are very considerable. The income of the various Protestant missionary societies is hardly less than three-quarters of a million sterling annually, and the number of European ordained missionaries maintained by them is about 900. This is exclusive of a considerable number of reverend missionaries employed within the British empire by societies in the United States. The number of native Christians under their care, together with children at school, cannot be less than a million.

In conclusion, the statistical summary under the three heads, the area of the empire, the inhabitants, and their works, has been presented. From it the following inferences are to be drawn regarding the British empire :—

The area of the British empire is enormous, amounting to at least $8\frac{1}{2}$, perhaps even to 10 millions of square miles, or nearly one-fifth of the habitable globe. The lesser part only is cultivated or occupied, some portion being uncultivable; but the cultivable portion ready for cultivation or occupation is vast enough to support an indefinite increase of population.

The great length of coast line, mostly inhabited by a seafaring population, and dotted from point to point with large harbours, offers maritime advantages in an unequalled degree.

The population of the empire, amounting to 305, perhaps to 315, millions of souls, is vast. Still the imperial area is, on the whole, but sparsely populated, with an average of only 33 persons to the square mile, notwithstanding the mighty aggregate of the people, as the population is most unequally distributed, being extremely dense in some regions.

The lesser proportion of the population belongs to the Caucasian fair, dominant, and Christian race; the majority consists of the coloured Aryan Asiatic race, professing the Hindu and Muhammadan religions. The proportion of the Mongolian Buddhist race and of the aboriginal races is small; while the entire Hindu people, and half the Muhammadan world, are under the British crown.

Although in the United Kingdom the population is largely urban, still in the empire, as a whole, it is chiefly rural.

The total of yearly revenue and receipts, governmental and local,

amounting to 264 millions sterling, is unequalled, but falls at the moderate rate of $1\frac{1}{4}l.$ sterling per head of the total of British subjects.

Of the total sum collected by authority from the people, one-fourth is for local purposes, immediately concerning the ratepayers; three-fourths being for governmental purposes.

Of the governmental taxation one-fourth only is direct, such as land and property taxes; and three-fourths indirect, such as customs and excise, which grow by natural increment; but the local taxation is for the most part direct.

The armed forces, by sea and land, though numerically large, show a very moderate ratio to the area and population; the section of the people absorbed in military employ being extremely small, and the military expenditure, compared with the imperial revenue, being the cheapest in the world, with the exception of the United States.

The total of armed forces on land, nearly a million of men, is apparently great, though its unity and organisation are not complete. But the proportion (more than two-thirds of the whole) belonging to the fair or European races is satisfactory.

By sea the number of ironclad war vessels ready for action indicates a degree of naval preparedness hardly to be matched by foreign nations.

The total police force of all kinds is very moderate, indicating a peaceful and law-abiding disposition in the people.

The mercantile marine has nearly half of the steam tonnage, of the carrying power, of the port entries, and of the freight earnings of all the nations together, and two-thirds of the shipbuilding.

While the ocean-borne commerce of the United Kingdom is maintained at its maximum, that of India, though large, is relatively low, while that of the colonies is amazingly high.

About one-third of the world's commerce is contained within the British empire.

The average of ocean-borne commerce per inhabitant in the United Kingdom is considerably higher than in any other large State of the world, but is exceeded by the average of the busy little kingdoms of Belgium and Holland.

About one-third of the banking business of the world is done within the British empire, justifying the claim of London to be the first of all banking centres.

The average of annual earnings per inhabitant in the United Kingdom is approached by that of its offspring in America, but is more than double that on the continent of Europe.

In wealth, consisting of land and cattle, railways and public works, houses and furniture, shipping, merchandise, bullion, and

sundries, the British empire is the wealthiest State on earth, but its preponderance in this respect is not nearly so great as might be expected from the number of its population, because the wealth of India is relatively small.

The ratio of earnings on capital in the United Kingdom equals that of the United States, and exceeds that of the continent of Europe. But it is surpassed by the ratio of Canada and Australia.

Respecting the aggregate of national industries—agriculture, commerce, banking, manufactures, mining—taken in combination, the United Kingdom is beginning to fall behind the United States, though the British empire, on the whole, preserves the first place; but despite disparity of population the mother land still achieves nearly as much as its gigantic offspring, and the energetic genius of the progeny still survives in the parent.

The mileage of railways, on the whole, is not remarkable, being apparently small. But the work done by the railways is exceedingly great, far surpassing relatively that shown by any other nation, and the speed of the trains is generally greater.

The length and size of canals for navigation and for irrigation are unsurpassed.

The decrease of crime and of pauperism is satisfactory in the United Kingdom, while pauperism hardly exists in the other dominions of the empire, and the charitable funds raised in the United Kingdom are enormous.

The number of patients in the hospitals, though large, is not remarkable relatively to the size of the empire.

Regarding thrift, the growth of savings banks is but moderately great, being less than in some small European States, like Switzerland and Scandinavia, and much less than in the United States; but the development of friendly and provident societies, and of life insurance, is probably greater than in any other nation.

The sum total of education is not great relatively to the empire at large, mainly because India has much way to make up, the proportion there being behind that of Europe, and much behind that of the United States; but the results of the post office and the electric telegraph indicate an unequalled activity.

The efforts made in the United Kingdom for the support of religious missions to non-Christian nationalities are honourably sustained.

Media *of* Exchange: *being some* Notes *on the* Precious Metals *and their* Equivalents.

By John Biddulph Martin, Esq., M.A.

[Read before the British Association for the Advancement of Science, at Montreal, August, 1884.]

Money, or the pursuit of money, has from all time lain under the ban of writers of every class. The love of money is declared by the Bible to be the root of all evil:* the money-getting life, says Aristotle,† does violence to our natural instincts, and may be put on one side in an inquiry into the nature of virtue and happiness:—

> "Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay,"‡

exclaims a poet of far more recent date in didactic rhyme: and finally, we may quote a line from one of our most modern and most brilliant economic teachers, John Stuart Mill,§

"There cannot, in short, be intrinsically a more insignificant "thing, in the economy of society, than money; except in the "character of a contrivance for sparing time and labour."

But it is superfluous to demonstrate that it is the abuse and not the due use of wealth that is laid under a ban; from end to end of the Bible, not only spiritual, but temporal and material blessings are held out to individuals and nations alike, as the reward of integrity and virtue. It is not the accumulation, but the excessively unequal distribution of wealth, that saps the life of a nation; the desire for and the pursuit of wealth is common to every race and class, and its phenomena have been the subject of investigation by both the statesmen and the economists of every age. The original benedictory command,‖ to "be fruitful, and multiply, and "replenish the earth, and subdue it:" comes into no collision with the modern inquiry as to whether the ultimate source of wealth is to be sought in human labour, or in the fruits and produce of the soil. The scope of the present remarks is by no means equal to this vast and already well-laboured field; it is proposed rather to treat briefly of the nature of the substances to which, in a

* 1 Tim. vi, 10. † Eth. Nic., book i, chap. v.
‡ Goldsmith's "Deserted Village," l. 51.
§ "Political Economy," book iii, chap. vii, sec. 3.
‖ Gen. i, 28.

restricted sense, the term "money" is applied, and of the phenomena that attend the use of these, as well as of the substances which form their substitute or equivalent.

I.—*The Precious Metals.*

At the base of every civilised monetary system lie one or other or in name both, of the metals gold and silver. The inherent qualities which have conferred on these substances this peculiar distinction are well known; their indestructibility, uniformity of quality, divisibility *ad infinitum*, their great value in small bulk, and their comparative steadiness in value, no less than their adaptability to many purposes of use or ornament, necessity or luxury, have commended their adoption in all time to nations of every quarter of the globe. Perhaps the greatest exception is furnished by the case of the nomadic aborigines of North America; apart from these, and from the islanders of the South Seas, gold and silver have been in almost universal use. Under these circumstances a kind of glamour has spread itself over the so-called precious metals, that has always tended to invest them with qualities other than those which belong to articles that are, in fact, procurable only by the same labour, and are subject to the same laws. The acquisition of gold itself has a strange and uncontrollable fascination, the retention of it, or its acquisition in exchange is held to enrich, to part with it to impoverish. In the words of Mill, "a person who parts with money to obtain "commodities, unless he intends to sell them, appears to the "imagination to be making a worse bargain than a person who "parts with commodities to get money."* Hence the prospect of rapidly acquiring a store of this supremely valuable commodity has before now, and may at any time again, produce the phenomenon known as a gold-fever, such as those that have filled the ports of Melbourne or of San Francisco with shipping, and have denuded them of sailors, while the ordinary industries of the land-population have been almost abandoned in favour of the one all-absorbing form of enterprise. That a gold-rush stimulates the development of a country, and is in the end beneficial, there can be little doubt; but with a few exceptions the gold-seekers, as a rule, learn by experience that the value of the article thus produced is in the main regulated by the average cost of production,† and that the fabulously enhanced price of every

* "Political Economy," book iii, chap. vii, sec. 3.

† On the subject of the relation of cost of production to value, see, on the one side, Mill, "Political Economy," book iii, chap. iv, secs. 1, 4, 5, et al.; on the other, Professor Cairnes, "Leading Principles of Political Economy," part i, chap. iii, sec. 2.

article of luxury or necessity very nearly compensates the unusual supply of gold. Nor is this fallacy that haunts the competitors for the precious metals peculiar to individuals; it has for many ages of the world's history been a maxim of state-craft that national wealth must vary directly with the stock of bullion held in the country, and in violence to the natural laws of demand and supply that regulate international trade, every effort has been made to attract and keep gold and silver within the realm, while by all sorts of pains and penalties it has been sought to discourage or prevent their export. In the present day, the truth respecting the conditions of the precious metals is more accurately recognised; it is now better understood that gold and silver are not a fixed centre, as of a solar system, round which all other commodities revolve subject to varying attractive forces among themselves, but that they are merely planets in the same stellar space, whose orbits are in a comparatively small degree subject to the attraction of other bodies. That they are not free from the eccentricities due to such attractions is obvious from past history; it can hardly be doubted that, but for considerations to be referred to later on, these eccentricities would have been more strongly marked. The stability in price of the precious metals is in the main due to their durability; the agriculture of the world does not produce on an average more than a year's consumption plus a reserve for purposes of seed or propagation; it is more or less the same with manufactured articles. But the annual out-put of gold and silver is added to a heap that is not subjected to any such cause of diminution; save for certain purposes of art or ornament, for wear and tear, and for absolute loss by land or sea, they may be called indestructible. Moreover, the annual out-put is, as a rule and proportionally to the whole, fairly steady, and the apparently uniform rate at which they are produced has given no small countenance to the conception of a possible fixed ratio between the two, and that one or the other, or both, can be made a fixed measure of the value of other commodities. But it is not necessary to study in any history of prices that gradual decline in the purchasing power of gold and silver to which any old book of accounts bears witness; a decline that appears surely and gradually progressive, in spite of occasional oscillations. The fall in prices during the last few years has caused a general, though not entirely unanimous belief in the permanent appreciation of gold; yet it is well to mark that only a few years ago one of our most careful economists* was engaged in examining into the decided rise of prices then observable. The suggestion of Humboldt that a vast treasure of gold might probably be derived

* Professor Jevons, 1869.

from South America has no inherent improbability, but it has not as yet been fulfilled. Nor have the sanguine gold-miners in other parts of the world yet realised that Eldorado in search of which they have ventured with a light heart, in spite of the consideration that over-success might have the effect of disturbing prices sufficiently to defeat the very object of their enterprise. From the time of Solomon, who is recorded to have made silver* to be nothing accounted of in his days, to that of the great inundation of Europe by Peruvian and Mexican gold and silver, which is said† to have caused prices to rise four or five times above their previous level, and finally, in the case of the Australian and Californian gold-finds of our own day, the abnormal increase of the world's stock has in no long time been absorbed, and but for other influences would have caused but a transient ripple on the surface of the mass to which the addition was made.

II.—*Coin.*

Such, then, are some of the considerations that have caused gold and silver to be chosen as what is known as a "circulating "medium," in the discharge of either the every day purposes of life, or in the other extreme, of the balance of international trade. It is unnecessary to say that before these substances can be really serviceable in the former way, they must be converted into coin; it is the prerogative of every civilised State to impress on the bullion current in the country a stamp, certifying to its weight and fineness. By virtue of this certificate of fineness coin circulates freely within the borders, without question as to the exact weight; but as soon as it crosses the border it ceases to have any virtue save such as it possesses as bullion, and international balances of account must be settled to this day in the same way as was the first money transaction on record, by the transfer of so much weight of bullion, "current with the merchant."‡ The advantages of a metallic currency are obvious, and do not require to be enumerated in detail; its drawbacks lie less on the surface, and do not so readily strike the imagination or the reason. The very conditions under which the national stamp is affixed to gold or silver, the difference that exists between coin and bullion, is in itself a subject of the widest divergence of opinion between authorities of undeniable and equal weight. The question whether the State, in arrogating to itself the monopoly of coining, has a right to levy toll on the bullion coined, has now narrowed down into the delicate question whether coin is a manufactured article; and if so, whether the State may

* 1 Kings, x, 21.
† Adam Smith, edit. McCulloch, note ix, 1.
‡ Gen. xxiii, 16.

not fairly make a charge for manufacture. If bullion is converted into coin for the sole convenience and advantage of the owner, it is hardly fair that he should gain this advantage at the public expense; but if the coin is merely a counter while in home circulation, and if as soon as it is required for use beyond the frontier, its value is merely that of the bullion that it contains, it does not seem unreasonable to take the view that coinage is a mere act of supervision by the State for the common benefit, which may fairly be charged to the general account. Any charge beyond this becomes a tax, levied either for the purposes of revenue, or for the benefit of the ruler. To take advantage of the facility with which this tax can be levied in the way of debasing the standard ("that least covert of all modes of knavery, which consists in calling a shilling a pound"),* has been in past times a temptation to which rulers have only too readily yielded, to the immense injury of the trade and commerce of the realm.

The perpetual and inevitable loss in weight that a metallic coinage undergoes is an expense attendant on its use for which provision must be made. The annual wear and tear of an English sovereign appears to be at the rate of $\frac{350}{1,000,000}$ parts, or something less than one-tenth of a penny per annum. Mr. Hendriks has put the case in this way—that assuming a rate of wear uniform throughout, this gives a life of some 2,866 years before the last vestige of a sovereign would disappear; in other words, there would still be something left of sovereigns coined not much later than the reputed date of the siege of Troy. It is well known that the English Coinage Act professes to make each member of the nation, *quoad hoc*, an inspector of weights and measures, and it is no less well known that this Act is completely inoperative, and that the gold coinage is in a most unsatisfactory state. The Chancellor of the Exchequer, declining on the one hand to throw the cost of restoring it on the public purse, admitted on the other hand that the imposition of a mint-charge was impracticable, without altering the mint price per ounce of gold and bullion. This admission appears to be, in other words, a statement that a mint-charge is a tax on the mine, and it would indeed be singular if by the imposition of such a tax, the policy of the past were entirely reversed, and the old theory of an export duty on bullion were replaced by what would amount in effect to a duty on import. The alternative course, whereby it is proposed to reduce to a token a portion of the gold coinage, while maintaining intact the unit of account, has been argued *pro* and *con* at no small length elsewhere; it may suffice here to say that the proposal lends colour to the theory that

* Mill's "Political Economy," book iii, chap. vii, sec. 3.

for purposes of home trade it is the coin and not the gold that we want, while for a reserve, or for the settlement of international balances, we require the gold and not the coin. If this be so, coinage can hardly be considered as a process of manufacture enhancing *pro tanto* the value of the raw material, but rather a State certificate of quantity and quality to be affixed at the general expense.

But by what remedy soever the loss by wear and tear be made good, it remains a loss, inevitable and irreparable, and it is hardly an exaggeration to adopt the view of a late English Chancellor of the Exchequer, that a gold currency is an expensive luxury, for whose enjoyment we must pay. The expedients by which the use of coin is economised, and by which it is either supplemented or superseded, have the next claim on our consideration.

III.—*Bank Notes.*

In every nation that is progressive in population, industry, and wealth, the settlement of transactions increasing daily both in importance and number by payment of actual coin, must become constantly more irksome. For all its compactness, any considerable amount of coin is bulky and heavy; it is, in the words of Pepys, "deadly inconvenient in the telling," and the expense and risks of transport are considerable. To be able to pay by a piece of paper that shall ultimately and indubitably be convertible into bullion is an advantage that cannot speedily fail to recommend itself. Hence the origin of bank notes is clearly traceable to the practice of depositing a sum of coin in the hands of an individual of undoubted credit, against his promise to repay the like sum on demand. From this rude system of deposit notes undoubtedly sprang the bank note, a form of currency that was clearly in use in England long before the foundation, in 1694, of the Bank of England. Hence has arisen the system of private and local note circulation throughout Europe. But in the case of national issues the origin of note circulation is different, and has for the most part arisen from the exigencies of the national exchequer. In the majority of cases the State, having borrowed of an association of capitalists the money of which from time to time it had need, has authorised them to issue notes on the credit of the State, acknowledging the debt either by way of inscription in the books of the National Debt or otherwise. In some instances the authority to issue quasi-State notes is placed in the hands of an association of banks, and it may be remarked that in the two European States most strongly imbued with republican traditions, Italy and Switzerland, the system of the "Consorzio," and the "Concordat" bank most nearly resembles the national bank system of the

United States. The banks of England, France, and Germany are in this respect but quasi-State banks; the most complete instance of a State bank is that of Russia; an unfortunate instance, since there is no similar institution whence bank notes have been issued in such reckless disregard of true economic principles.

Without going closely into the details of the arrangements under which bank notes are issued in various countries, it is sufficient here to remark—it is little more than a truism—that paper money never can be, it can only represent, money. The fallacious theory that fixed capital, and especially land, may be represented by its nominal equivalent in paper money, has more than once been made the matter of practical experiment; needless to say the result has been uniformly disastrous. From such an experiment England was spared nearly two hundred years ago, when the Whig Bank of England prevailed (it was rather a political than an economic victory) over the Tory land bank.* France was less fortunate, and once under John Law's Mississippi scheme, and again under the republican issue of "assignats," the country suffered almost total ruin by a flood of inconvertible paper money. Yet the fact that prices accommodate themselves but gradually to an expansion or contraction of the currency has always been a temptation to tamper with the paper, no less than with metallic issues. It need hardly be said that an inconvertible bank note is on all fours with a debased coin. Yet instances are not wanting when the end has justified the means; on two occasions in England the mere authority to suspend the Bank Charter Act, in other words to enlarge the volume of unsecured notes, has allayed the crisis that their temporary scarcity had caused. Perhaps the most remarkable instance of the recovery by a nation of its financial position is afforded by our neighbours of the United States; under the stress of civil war the Federal States issued paper money to a gigantic amount, and in five years augmented by five times its total amount, while in its relation to gold the value had fallen by one-third. But in fifteen years this heavy agio had been absorbed by the growing wealth and population of the republic, and insensibly, almost without an effort, the country resumed specie payment.

Year.	Population.	Circulation.	Value in Gold.	Circulation per Head.
		£	£	£ *s.* *d.*
1860	31,433,000	41,420	41,420	1 6 4
'65	34,748,000	196,663	138,451	3 19 8
'79	49,395,000	138,595	138,595	2 16 1

* Macaulay's "History of England," chap. xx.

The amount of paper money which a country in normal circumstances is able to absorb, depends on a variety of conditions, which are seldom identical in any two cases. Habit counts for much; something, too, is attributable to the stability and confidence enjoyed by the government; still more to the wealth or poverty of the country, and to the conditions under which the bank note circulation is issued; a great deal, too, to the extension of the banking system, and the familiar use of cheques and other instruments of credit; for the consideration of which a small space must yet be reserved. The complexity of these forces, and the differing degrees to which they respectively and collectively operate, may be estimated by showing in a tabular form the amount of bank note circulation which is absorbed by the principal countries of Europe, and also by the United States. The year selected, 1878, was one that may be taken as marking the end of the extreme depression that followed on the great inflation of 1873. The amount of bank note circulation is given in English sterling at per head of population, and at the amount of gold for which (in cases of an inconvertible currency) it would be convertible; and the source from whence it is drawn will be found in the "Journal "of the Institute of Bankers," March, 1880.

	£	*s.*	*d.*
Netherlands	4	9	7
United States	2	17	1
France	2	10	5
Belgium	2	8	10
Italy	2	2	–
Denmark	1	9	9
Austria	1	8	1
Russia	1	7	–
United Kingdom	1	6	9
Switzerland	1	4	10
Germany	1	–	–
Norway	–	18	2
Sweden	–	18	–
Spain	–	8	6
Portugal	–	5	2

This list offers many points for consideration which the present occasion does not suffice to discuss, but a word may be said as to the effect that will follow a contraction or expansion within reasonable limits of the paper circulation of any country. The latter course is the one of which we hear the most; to recommend the creation of "more money" is a favourite nostrum in cases of its real or apparent scarcity. But the whole financial history of commercial nations shows that the habits and requirements of a State will absorb paper money of so much gold value and no more. On the other hand it must have, for purposes of pocket money and petty cash, as also for reserve and settlement of international trade, so much bullion and no less. To enlarge the volume of a convertible paper currency means therefore, in proportion to the extent of such enlargement, to lower, at least temporarily, the loanable value of money, while more tardily the nominal value of commodities will

rise. The result of such a disturbance in the equilibrium of the money-market will appear in the establishment of adverse foreign exchanges, and the consequent export of bullion from the country; whereby it will be left with a diminished metallic currency available for meeting an enlarged paper circulation. But the national store of bullion cannot, consistently with the maintenance of a convertible paper circulation, be suffered permanently to fall away, and it can only be made good by a rise in what is known as the money rate (and in extreme cases by a fall in prices generally), sufficient to recall the exported bullion, and to readjust the balance.

IV.—*Instruments of Credit.*

Among the principal causes mentioned above as affecting the amount of "money" required for transacting the business of a nation, was the development or the reverse of the banking system. The cases of England and France may to some extent be cited in illustration of this: their condition as to area, population, facility of communication, enterprise, and wealth, are, if not similar, at least fairly comparable; their bank note systems give equal assurance of convertibility to the holder, but the population of France absorbs a bank note circulation of 2*l.* 10*s.* 5*d.* per head, against 1*l.* 6*s.* 9*d.* in the case of England. In point of fact, the use of cheques in France is as yet only beginning to be understood, and the system of clearing, which has reached in England a point of extreme and almost perfect development, can scarcely be said to exist. It is difficult to arrive at figures that in this respect are capable of exact comparison, but it is on record that of the total transactions of the Bank of France (Report, 1877 and 1878) some 43 or 44 per cent. in value are effected in notes and coin, whereas the independent observations of two London clearing bankers have shown that only a fraction more than 3 per cent. of their dealings are settled in this way.

The enormous convenience of a good banking system cannot but lead to its rapid development, and it is obvious that other things being equal, the extension of payment by cheque or book transfer is a direct economy of coin or notes. But while banking is spreading itself, and teaching the people to dispense daily more and more with money in their purse, other conditions do not stand still. There are, indeed, some operations of a quasi-banking character undertaken by the State that act in the same direction; State savings banks, and the facilities given for transmitting money in the shape of post office orders, contribute to economy in the use of coin. But on the other hand, population will usually be found to increase concomitantly with the wealth of which a demand for banking facilities is a symptom, and a gradual and

continued rise in the rate of wages and salaries seems to answer in the negative the suggestion that the general purchasing power of gold has of late years increased. An increase of wages means to a certain and large class more ready money in their pockets, and the undeniable fall in the price of many articles of general consumption seems to be accompanied by a rise in the general standard of minimum comfort. Under these circumstances, it is but natural that the estimates of the coin in circulation should show a progressive increase, and the correctness of these estimates appears to be borne out by the fact that in the case of the London bankers referred to above, the percentage of transactions in coin was identical in the years 1864 and 1878 respectively. Whether in any prosperous State the stock of gold and silver available in case of need and to be drawn from active circulation, as in the instance of England or France, or from bank reserves as in the United States, actually keeps pace with the total volume of national trade, may be doubtful, and perhaps incapable of proof or disproof, but in the stability of national institutions, and in the facility of international communications, and the inter-dependence of nations on each other for articles of use and consumption appears to lie the best safeguard against the occurrence of a gold famine. The surplus gold of the world will inevitably gravitate to any point where an abnormal disturbance of prices indicate a more than ordinary demand for money, and the balance will be adjusted, though it be in the meantime at the price of individual and even national loss.

Conclusion.

The preceding attempt to sketch in the broadest lines the nature and functions of money and its substitutes, as we find them, leave little room to enlarge on any suggestions as to the manner in which any reforms could be effected. The decimal system has a literature of its own, and one of no small volume; almost inseparable from it is the suggestion for an international system of coinage. The advantages of a decimal system of coinage, as well as of weights and measures, are on the surface; its drawbacks, and the comparative advantages of other systems of notation, are less obvious, but none the less forcible. In matters of language, as in matters political, the absorption of the less by the more preponderant mass is a process that is always going on, and in monetary affairs a tendency to unification is to some extent always perceptible. In the United Kingdom we have now a single monetary system; in Germany and Italy unification has been accomplished with the happiest results. But national habits and international prejudices count for much, and a fair opportunity was lost when Germany,

starting with a clear field, deliberately elected to create a gold coinage identical neither with that of England, the United States, or of the Latin League. Nor have we in England, who buy and sell wheat by almost as many measures as we have markets, and maintain various metrical systems for various classes of commodities, any ground for being censorious in this matter. It will probably be long before we attain the perfection attributed by Montesquieu* to a tribe of Central Africa, who calculate values in a non-existent unit of account, or before we adopt any of the ideal systems of currency that ingenious brains have devised, and of which a characteristic example is to be found in the collected posthumous works of the late Professor Jevons.† In the meanwhile the stream of international commerce will flow on, hardly disturbed by the obstacles that varied systems of currency place in its course. Money, and the pursuit of money, has much to answer for, but this at least may be said in its favour, that a community of money interests must inevitably tend to the establishment of harmonious relations, not merely between distant parts of a great empire, but also between the inhabitants of every portion of the world.

* "Esp. des Lois," chap. xxii, p. 8.

† "Investigations in Currency and Finance." Macmillan, 1884, p. 297.

MISCELLANEA.

CONTENTS :

	PAGE		PAGE
I.—Immigration into the United States	496	IV.—Catalogue of the Library of the Statistical Society	526
II.—A New Industrial Inquiry	516	V.—Quarterly List of Additions to the Library	529
III.—The Fate of the Divorced	519		

I.—*Immigration into the United States.* *By* Armand Liégeard. (*Translated from the "Journal de la Société de Statistique de Paris," June*, 1884.)

Of late years there has been an enormous increase in the volume of European emigration to the United States, the number of aliens landing in that country having doubled itself during the last ten years; and some idea may be formed of the vast proportions that this tide of immigration has attained when we state that during the year ended 30th June, 1882, the returns showed a total of 788,992 immigrants, these numbers being greatly in excess of those of the previous twelve months. It would be impossible to ignore the preponderating influence that this emigration has exercised over the whole economic development which has been so rapidly effected in the United States, and if proof were needed the following figures alone would be sufficient to establish the fact.

It is estimated that since the year 1776, approximately 12 millions of aliens have settled on the hospitable shores of the United States, and accepting the estimates formed by Dr. Seybert and Professor Tucker, that the total number of immigrants who landed previous to the year 1820, when official statistics of immigration were first published, amounted to 250,000, we arrive at the following figures, representing the total immigration from the year 1776 up to the latest date :—

Periods. (Years ending 30th June.)	Number of Immigrants.	Annual Average.
Up to the year 1820 ...	250,000	—
1820–30	151,824	15,182
'31–40	599,125	59,912
'41–50	1,713,251	171,325
'51–60	2,598,214	259,821
'61–70	2,491,214	249,121
'71–80	2,944,696	294,470
'81–83	1,917,070	639,020
	12,665,394	—

The following table, which has been extracted from the last

American Census Reports, shows the composition of the alien population in the United States in 1880:—

Principal Countries of Origin.		Alien Population Residing in United States.	
United Kingdom	England....	662,676	2,769,585
	Ireland	1,854,571	
	Scotland....	170,136	
	Wales.....	82,202	
Germany			1,966,742
British North America			717,084
Sweden			194,337
Norway			181,729
France			106,971
China			104,451
Switzerland			88,621
Bohemia			85,361
Mexico			68,399
Denmark			64,176
Holland			57,090
Poland			48,557
Italy			44,230
Austria			38,663
Russia			35,722
Hungary			11,526

Taking the aggregate of the different countries of origin, we find 6,679,943 foreigners out of a total population of 50,155,713, or one alien to every 7 inhabitants.

Again, there is another method by which we can arrive at a true estimate of the immense importance of this constant stream of emigration to the United States. Assuming that the average age of immigrants is 20, and that 100 immigrants of that age represent 150 births, which is the natural annual increase of a population of 6,000, we may deduce from this that the number of persons arriving in the United States in 1882 corresponds to a population of 50 millions, which is the actual population of the country. It results therefore that there are in the United States 50 million inhabitants producing an excess of births, and out of the United States, principally in European countries, another 50 millions rearing children and bringing them to a producing age at the cost of the very greatest sacrifices, essentially to benefit the United States. In other words while the majority of countries owe their increase entirely to their own resources, it is conclusively proved that Europe counts for half of the enormous increase in the population of the United States.

Without the assistance of this immense volume of immigration, those towns of the Union whose average population before 1776 was only about 20,000 to 30,000 inhabitants, would not be in a position to show such an enormous increase as was evidenced by the last census. For example, New York has now a population of 1,200,000; Boston, 353,000; Brooklyn, 560,000; Philadelphia, 847,000; and Baltimore, 332,000. Chicago, Buffalo, Cincinnati, and New Orleans, which in 1820 were simply hamlets, at the

present time have a population varying between 150,000 and 500,000 inhabitants. St. Louis, Missouri, which in 1848 was but a *rendezvous* for trappers, and San Francisco, at the same period only a village containing about 300 log huts, are now large and important commercial centres, with a population respectively of 350,000 and 234,000.

If, after deduction of all expenses, we take the sum of 20*l.* as representing the average money value of each immigrant, it follows that the national wealth of the United States was increased solely by immigration by nearly 16 millions sterling during the fiscal year 1882; and here it must be observed that in this calculation no account has been taken either of the value of free labour, which is, as a rule, infinitely superior to slave labour, nor of the capital which is introduced by the immigrants themselves. On this point it is greatly to be regretted that no returns are made by the authorities at Castle Garden showing the amount of securities and of the foreign gold and silver exchanged at the office there for American money by immigrants on their arrival. Such information would be invaluable as a supplement to the usual emigration statistics. It may safely be taken, however, that the capital introduced into the country is considerable, as emigrants as a general rule before leaving their native country realise the whole of their property and effects. As an illustration of this we may cite the case of a farmer who landed in 1882 from England. He brought with him in English gold and notes a sum of about 5,362*l.* sterling, which, on his arrival, he converted into American money. Careful investigations which have been made by American economists with reference to the amount of money introduced into the country by immigrants have resulted in establishing $80 or 16*l.* 13*s.* as the average sum brought by alien passengers, and this sum is assumed to be the correct one. At this rate those who landed on American shores in the fiscal year 1882 added upwards of 13 millions sterling to the national wealth of the United States.

The following table will be useful in showing the movement of immigration into the United States from the years 1856 to 1883 inclusive :—

Years.	Immigrants.	Years.	Immigrants.
1830	22,322	1868	289,145
'42	100,000	'69	285,287
'47	200,000	'70	356,303
'50	300,000	'71	346,938
'54	427,833	'72	437,750
'56	195,857	'73	422,545
'57	246,945	'74	260,814
'58	119,501	'75	191,231
'59	118,616	'76	157,440
'60	150,237	'77	130,503
'61	89,724	'78	153,207
'62	89,007	'79	250,565
'63	174,524	'80	593,703
'64	193,195	'81	720,045
'65	247,453	'82	788,992
'66	314,840	'83	560,196
'67	293,601		

It will be observed that from 1847 to 1857, immigration into the United States was largely resorted to, influenced no doubt in a very great measure by the annexation of Texas, New Mexico, and California, and also by the discovery of gold in the latter country. There can also be no question that the Irish famine helped to swell the number of immigrants, as did also the revolutions which desolated France, Hungary, and Germany. It has been estimated that as many as 1,300,000 of the Irish people were forced by the famine to leave their native country and seek elsewhere the means of subsistence.

The financial crisis which supervened in 1857 caused a considerable diminution in the number of immigrants during the two following years, the figures falling to about half of those of the year 1857, and the War of Secession caused the numbers in 1861 to drop to 89,000—the lowest point reached. At the close of the war immigration again showed an upward tendency, and there was a progressive increase until the year 1873. This increase may be traced to the large loans which the United States Government found it necessary to contract in Europe to defray the expenses of the war, and to pay the increased wages which were granted to the workmen during this period. In 1873 a new financial panic set in, and its influence was perceptibly felt until 1877, the year in which its effects were most disastrous and the crisis attained its maximum. Dating from this period, the American Union having resumed its specie payments, and the country generally having recovered from the shocks both of war and financial panics, immigration again showed an immense increase, and the numbers attained a higher figure than had ever previously been known. It may however be remarked that the figures in 1883 compared with those of 1882 and 1881 show a decided falling off, but this may be accounted for by the bad harvests of 1881, which had the effect of paralysing railway enterprise, and of effecting a considerable diminution in the consumption of articles of manufacture; during the same period agricultural conditions were, *per contra*, most favourable throughout the whole of Europe.

It will be seen then, that, speaking generally, a European crisis, revolutions, famines, financial panics, and the like, increase the volume of emigration to the United States, while an American crisis diminishes it. Of these two causes it is however undoubtedly the latter which exercises a preponderating influence over emigration. It may be stated as a broad fact that when there is a period of depression the demand for workmen falls off, emigration agents relax their efforts to obtain recruits, and aliens already established in foreign countries are less likely to persuade their relations and friends in Europe to come over and join them. When there is a period of prosperity it is quite the reverse. The influence to which we have already referred may be compared to that of the temperature on the thermometer, and it even makes itself felt on the half yearly periods of two different years. Thus, times being unfavourable in the latter half of 1881, emigration fell off considerably in the latter part of 1882, and yet, notwithstanding this, the year

1882 proved a more favourable one, both as regards trade, commerce, and emigration.

If we examine in detail the progress of the current of emigration to the United States according to nationality, we arrive at precisely the same results as those we have shown above, and if occasionally there are to be found certain exceptions, in themselves insignificant, it will be seen that they are easily explained. The following table will show what has been for the period comprised between the fiscal years 1867 and 1883 the movement of emigration to the United States, particularly distinguishing those countries which have contributed to it to any appreciable extent:—

Countries.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.
Germany	124,076	122,677	124,965	118,225	82,554	141,109	149,671	87,291	47,769
England	61,730	51,759	35,673	60,957	56,530	69,764	74,801	50,905	40,130
Ireland	64,559	63,633	40,786	56,996	57,439	68,732	77,344	53,707	37,957
Scotland	—	—	7,751	12,521	11,984	13,916	13,841	10,429	7,310
Canada	18,128	5,373	20,918	37,908	26,766	24,825	31,711	25,106	18,656
Sweden	5,919	11,253	24,224	13,443	10,699	13,464	14,303	5,712	5,573
Italy	1,585	1,554	1,488	2,891	2,805	4,144	8,715	7,596	3,570
Norway	2,510	4,296	16,068	13,216	9,418	11,421	16,247	10,384	6,093
Switzerland.	4,656	3,405	3,650	3,075	2,269	3,650	3,107	3,093	1,814
Hungary	35	16	4	1	3	228	1,347	962	776
Austria	357	537	1,495	4,424	4,884	4,182	5,765	7,888	6,882
Denmark ...	2,031	1,596	3,649	4,083	2,015	3,690	4,931	3,082	2,656
Nova Scotia..	—	—	—	—	14,582	8,299	3,919	4,907	2,874
Russia	294	203	343	907	673	2,641	1,560	3,960	7,982
China	3,519	6,707	12,874	15,740	7,135	7,788	20,292	13,776	16,437
Netherlands	2,598	718	1,134	1,066	993	1,909	3,811	2,444	1,237
France	5,886	5,119	3,879	4,007	3,137	9,317	14,798	9,643	8,321
Poland	324	173	184	223	535	1,647	3,338	1,795	984

Countries.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
Germany	31,937	29,298	29,313	34,602	84,638	210,485	250,630	194,786
England	24,373	19,161	18,405	24,183	59,454	65,177	82,394	63,140
Ireland	19,575	14,569	15,932	20,013	71,603	72,342	76,432	81,486
Scotland	4,582	4,135	3,502	5,225	12,640	15,168	18,937	11,859
Canada	17,314	16,063	19,129	23,256	79,611	102,922	79,259	53,440
Sweden	5,603	4,991	5,390	11,001	39,186	49,760	64,607	38,277
Italy	2,910	3,143	4,131	5,759	12,237	15,387	32,077	31,784
Norway	5,173	4,588	4,759	7,345	19,895	22,705	29,101	23,398
Switzerland.	1,549	1,686	1,808	3,161	6,156	11,293	10.844	12,751
Hungary	630	373	646	632	4,363	6,826	8,929	11,240
Austria	5,646	5,023	4,504	5,331	12,904	21,109	13,619	10,923
Denmark	1,547	1,695	2,105	3,474	6,576	9,117	11,618	10,319
Nova Scotia..	2,582	3,467	4,081	4,072	13,183	14,437	13,317	9,364
Russia	4,764	6,579	3,037	4,434	4,854	4,865	16,321	9,186
China	22,781	10,594	8,992	9,604	5,802	11,890	39,579	8,031
Netherlands	855	591	608	753	3,340	8,597	9,517	5,249
France	8,002	5,856	4,159	4,655	4,313	5,227	6,003	4,821
Poland	925	533	547	489	2,177	5,614	4,672	2,011

It will be seen from the above that as regards the whole of the countries specified, emigration was on a continually ascending

scale until the year 1873, when its progress was checked by the financial crisis which supervened in that year. After 1873 there was a gradual diminution, lasting until 1877, when it again took an upward tendency, and its rapid progress became particularly marked; but in 1883 it will be observed that there is a considerable falling off, not confined to one country alone, but universal. An exception must, however, be made in the case of Austria and Russia; in the former a falling off being noticeable, dating from the year 1874, and in the latter from 1875. The inference may therefore be drawn that the influence exercised by cycles of depression and prosperity in the United States is longer in making itself felt in these two countries than in others. Another curious fact which is worthy of note is the rapid increase which appears to have taken place in emigration from Sweden and Norway in the year 1869, the figures for that year greatly exceeding those for 1868, only to fall again immediately, and then to exhibit the same progressive increase that is observable in the other countries. The figures representing Chinese emigration particularly call for some special comment, as they exhibit so many fluctuations, the causes of which are to be found mainly in the obstacles that the American Government have for many years thrown in the way of Chinese immigration before taking the final step of practically interdicting it.

One of the most striking facts which is brought out by the table given above is the enormous development of emigration from all countries dating from the year 1878, the year which marked the termination of the financial crisis in the American Union. This is clearly evidenced by the following tabular statement, which shows the proportional increase per cent. of emigration, comparing the years 1878 and 1882, distinguishing the principal countries of origin :—

Countries.	Emigrants to United States.		Proportional Increase per Cent.
	1878.	1882.	
Sweden	5,390	64,607	1,098
Germany	29,313	250,630	755
Italy	4,131	32,077	676
Norway	4,759	29,101	599
Denmark	2,105	11,618	451
Scotland	3,502	18,937	442
Russia	3,037	16,321	437
Ireland	15,932	76,432	379
United Kingdom	37,839	177,763	369
England	18,405	82,394	347
China	8,992	39,579	340
Canada	19,129	79,259	315
Austria	4,504	13,619	202
France	4,159	6,003	44

The very considerable increase which has taken place during the last four years in European emigration to the United States may be ascribed to the development of the railways which connect the more important European centres with the principal maritime

ports, and also to the improvements which are continually being made in steam navigation. A considerable reduction has just been made by the Canadian and American shipping companies in their passenger rates, a steerage passenger being now conveyed a distance of from 3,600 to 4,500 miles at a cost of about 4*l.*, and some companies charge even less than this. Another important factor in determining the volume of emigration, which must also be taken into consideration, is the rapid progress which has been made in the development and extension of the railway system in the United States, as will be seen when we compare the total length of line, which in 1835 did not exceed 1,098 miles, with the total length at the present time, namely, 113,000 miles. In October, 1883, the last rail of the North Pacific Trunk line, which connects at a short distance from Yellowstone the Pacific and Atlantic coasts, was laid down, and immigrants immediately on their landing at New York can now be conveyed by rail to the extreme limit of the Far West. As a matter of fact European emigration at the present day partakes almost of the character of great military expeditions; and the resources of the railway companies are sometimes taxed to their utmost to provide sufficient accommodation for the vast armies of emigrants which have to be carried over the various systems.

It would be interesting to compare the preceding table, which shows the increase that has taken place in emigration since 1878, with a statement distinguishing for each country the proportion of emigrants to their respective populations:—

Countries of Origin.	Number of Immigrants Landed in the United States in 1882 to every 100,000 Inhabitants of the respective Countries.
Canada	1,832
Ireland	1,502
Sweden	1,415
Norway	1,096
Denmark	589
Germany	554
United Kingdom	507
Scotland	500
Switzerland	380
England	315
Netherlands	237
Italy	112
Poland	65
Austria	64
Hungary	57
Belgium	55
Russia	21
France	15

It will be seen from the above that the country showing the most rapid increase in emigration, and at the same time, considering her population, the one which furnishes the largest proportion of emigrants, is Sweden, the increase being as much as 1,098 per cent. in the period comprised between the years 1878 and 1882, and the proportion to population in 1882 1,415 to every 100,000 inhabitants. On this subject Dr. Brock observes that the harvests in Sweden are subject to considerable variations, arising mainly from the frequent changes in the weather; the means of

existence are frequently hard to obtain, the fisheries are sometimes comparatively unproductive, and there are times when a falling off occurs in the demand for her timber, in the exportation of which so large a trade is carried on, and on this industry it must be remembered that a vast number of persons in Sweden are mainly dependent. Again, the Swedes already established in America are frequently in want of hands to assist in cultivating the vast extent of land which they have been able to obtain at a very cheap rate, and, preferring their own countrymen, they persuade their relations and friends whom they left in Europe to come out and join them, sending them at the same time the funds necessary to defray the expenses of the voyage.

Germany follows next after Sweden as regards the increase in emigration, the figures showing a proportion of 755 per cent. During the fiscal year 1882 as many as 250,000 Germans left their native country to seek fresh homes in the United States, and this enormous increase of emigration is viewed with the greatest apprehension by German economists and statists, many discussions on the subject having recently taken place in the Reichstag.

To account for this emigration *en masse* many theories have been suggested, among others the increase of pauperism in Germany; but this cannot be accepted as the true explanation, for as a matter of fact there has been of late years a considerable augmentation of wealth throughout the whole of the empire. On this point we are confirmed by the observations of Dr. Soetbeer the eminent German economist, who has devoted much time and attention to the subject of the national wealth of Germany. He tells us, basing his calculation on the official returns made to the Imperial Government, that not only have the conditions of life of the poorer classes materially improved, but the number of persons now enjoying large incomes has increased in a very marked degree. In support of his statement he quotes the following figures. In 1872 the annual revenue, which amounted to but 293 marks per head of population, had risen in 1881 to 308 marks, an average increase of 5 per cent. This augmentation of revenue is greater in proportion than the rise which has taken place in the price of commodities, and it is evident therefore that we must seek other reasons to account for this excessive emigration. The following are some of the reasons which have been suggested to account for it; the effect of the *Kulturkampf*, the law against socialists, the crisis in the tobacco industry, the excessive taxation of articles of necessity, and the burdens of military service. And as regards the latter we may observe that the American returns show that from 30 to 40 per cent. of the German emigrants who land at New York arrive without passports, thus affording almost conclusive evidence that they leave their own country to escape the conscription.

Being powerless to stem this current of emigration, the only thing that remained to be done was to introduce some beneficial measure having for its object the assistance and protection of pauper emigrants. It would seem to be not only difficult but well nigh impossible to devise a means of arresting this current of emigration, as Germany has no colonial possessions of her own, and it seems impossible for her to obtain any, all available places

appearing to be already taken up by other nations. Moreover it would be mistaken policy on the part of the Germans, and opposed to their own interests, to place any obstacles in the way of a movement which is essentially the cause of considerable profit to German trade generally, all industries more or less benefiting by emigration, as those who leave and who are established in other countries continue to deal in preference with their own countrymen.

Italy ranks third, and the increase of her emigration to the United States is established at the rate of 676 per cent. It appears from the returns that during the first four months of 1883, 15,000 Italians landed at New York, and the Italian Government, regarding with apprehension this excessive migration, and desirous of obtaining some information as to the reasons which led to it, caused a circular to be addressed by the Minister of Agriculture and Commerce on the 10th October, 1882, to the prefects of the various provinces, requesting to be supplied with information as to the determining causes of this emigration, the classes from which the emigrants themselves were chiefly drawn, and its effect generally from an economic point of view. As might have been foreseen, the replies to this circular were to the effect that want, or perhaps in some few cases a desire to improve their condition of life, were the determining causes in forcing Italians to leave their country and settle in foreign lands, and that the majority of the emigrants belonged to the agricultural classes, who before leaving disposed of their land and stock; the replies also went on to state that one of the effects of this emigration was in some parts of Italy a rise in wages. The representatives of the Italian Government abroad, who were in their turn called upon by the Government to furnish a report upon the subject, stated that Italian workmen were in great request by the contractors for the various railways in course of construction in the United States. They also pointed out that an important Italian colony had been established in Arkansas by Father Orféi, and that after the war between Chili and Peru a large number of Italians left South for North America, where the climate certainly is not so favourable, and the language not nearly so akin to their own, but where the safety of life and property is more assured and work more remunerative. To all these causes enumerated by the agents of the Italian Government, we may add another and a far from unimportant one, namely the constitution of the land laws, especially in the south of Italy, and the observation made by Pliny eighteen centuries ago may be taken to be as equally applicable at the present day: "*Latifundia perdidere Italiam.*"

The causes of the increased emigration from Norway and Denmark are much the same as those to which we have already alluded in the case of Sweden. As regards Russia, it will be observed that the rate of increase is established at a rather high figure, the proportion being about 437 per cent., and this notwithstanding the fact that emigration in Russia cannot be said to be largely resorted to, the official returns in fact only showing an average migration of 21 out of every 100,000 inhabitants. There can be no question that the increase is in a great measure due to the anti-Semitic movement which manifests itself in violent and unmerited persecution, which it would seem that the Russian

Government is powerless to prevent. It appears that during the fiscal year 1882, 10,000 Russian Jews who had been driven out of their own country landed at New York, seeking a new home like the French Protestants of old did after the revocation of the Edict of Nantes.

Taking next the United Kingdom, we find that the increase is at the rate of 369 per cent., and the proportion of emigrants to every 100,000 inhabitants about 507. Of all the European countries Ireland is the one furnishing the largest contingent of emigrants, about 1,502 out of every 100,000 inhabitants, or 1·5 per cent., leaving their native country to seek the means of subsistence elsewhere. The explanation of this is not far to seek; it is to be found in the social and economic crisis which has existed so long in this unhappy country. The present constitution of the land laws in the United Kingdom is also in itself a powerful cause of the ever increasing stream of emigration from its shores. It is true that English statesmen and economists are disposed to console themselves for this loss in the reflection that those who leave are but small consumers in their own land, and that once settled in America and established there, they would in time become large consumers of English produce and manufacture, and be in a position to aid in the development and extension of British trade and industry generally. Others, and they are in the majority, are in favour of effecting a deviation in the current of emigration, and of directing it towards Canada, and especially the districts on the west and north of Lake Superior. They are anxious for the appointment of a commission which should be entrusted with the duty of directing the stream of emigration towards the English colonies, and of helping to find places for the emigrants themselves. They ask for a grant from parliament to the extent of a million sterling for the purpose of forwarding 10,000 farm labourers with their families to Canada next spring, the amount to be repayable by charges on the produce of the land to be allotted to them.

At a meeting held on the 10th August last year, and presided over by the Lord Mayor of London, other and far different views were expressed. It was objected that in encouraging emigration great injury was inflicted on the farmers, who are already greatly in want of men, the Irish farm labourer having long since ceased to accept work either in the Midlands or in the South of England. The interference of the State in fostering emigration could have no good results. Why should those who are unwilling to work be assisted at the expense of the labouring classes of the community? Would it not be infinitely better to endeavour to promote thrift and temperance, and to encourage the idle to work, than to give these people the means of emigrating? The result of the meeting, however, was that the majority pronounced in favour of a State direction of emigration, and with this object in view a national association was established last October, representing 150,000 British workmen, and it may reasonably be expected that this question will soon receive a practical solution.

Coming next to the question of Chinese emigration, we find that it increased at the rate of 340 per cent., and the largest increase, about 322 per cent., took place in the twelve months ending 30th

June, 1882. To account for this rapid increase it will be necessary to review the past history of Chinese emigration to the United States. The Chinese appear to have a preference for San Francisco, where the majority of them settle, and they constitute at the present day about a tenth of the entire population of that city, 20,519 out of a total of 234,956 inhabitants. The number of men far exceeding the women in San Francisco, these immigrants offered their services as domestics and to supply the places of nurses and washerwomen. In course of time they worked on the railways as engineers, and in the workshops as operatives. Offering as they invariably did their services at the very cheapest rate, they caused a decided fall in wages, and thereby excited a considerable amount of bad feeling on the part of the Irish and German workmen, who became violently opposed to them on that account, and lost no opportunity of vilifying and persecuting them, frequently resorting to actual bodily violence. Feeling at last ran so high on this question that the expulsion of the "polygamist" and "opium smoker" was loudly demanded. The United States Government, before consenting to adopt this extreme measure, entered into negotiations with the Chinese Government, with the result that a new diplomatic convention was entered into to replace the old Burlingham Treaty which, for fifteen years, had regulated the conditions of Chinese emigration. This measure failed, however, to satisfy the San Francisco workmen, who, not content with the fresh restrictions imposed by this new convention, again demanded the absolute expulsion of the Chinese.

The representatives in Congress of the working classes maintained that a nation should herself be the absolute mistress of her territory, and therefore should have a perfect right to extend or refuse hospitality to aliens, and particularly in the case of immigrants who, in many cases being in a state of destitution, become a burden upon the country and are frequently a source of danger to law-abiding classes of the community. Besides, Chinese emigration, they contended, had never up to that time, and in all probability never would become productive of any good results as far as colonisation is concerned, for the sufficient reason that the Asiatic element holds itself distinctly aloof from other races, and therefore can have no part in effecting an increase in the population. Has not Peru, they said, been obliged to prohibit Chinese immigration since the year 1874 for precisely these reasons? In vain the opponents of the Expropriation Bill urged that such a decree would be opposed to all the fundamental principles of public right and justice in the United States, and altogether in contravention of the terms of the treaty recently concluded with the Chinese Government; that such a Bill would be fatal from an economic point of view, as there still remained 4,446,000 acres of land in California waiting to be cultivated; because the Chinese should be the best judges of the value of their own labour; and because if this measure became law, the United States would run the risk of closing against themselves the Chinese markets, which had supplied them during the fiscal year 1882 with tea and silk to the value of 4 millions sterling, and to which they had sent over a million pounds worth of cotton goods, petroleum, &c. And more-

over it was unreasonable to have any fears of a Chinese invasion, since it appeared from the last census returns that the total number of Celestials existing in the United States only amounted to 104,451, or 1 Celestial to every 479 inhabitants. Notwithstanding, however, the strenuous opposition offered to it, the Miller Bill was carried by a large majority in both Houses, and approved on the 8th May, 1882, by President Arthur, who had originally placed his veto upon it.

This Bill, which really only applies to Chinese labourers, has for its effect the suspension of Chinese immigration, and was to remain in force for a period not exceeding ten years. Chinese immigrants can no longer be admitted as formerly, without passports, any infringement of this regulation being severely punished, and they can no longer become naturalised American citizens. It is an anomaly that this law only applies to emigration by sea, and is silent on the subject of the arrival of Chinese *viâ* Mexico, Canada, and British Columbia. The Miller Bill had the effect of causing an immense influx of Chinese during the fiscal year 1882, the number of arrivals amounting to 39,579. This may be accounted for by the fact that in view of the measure speedily becoming law, they were anxious to arrive before the door was finally closed against them. When the law actually came into operation, a perceptible diminution in the number of immigrants soon became apparent, as in the year ended 30th June, 1883, only 8,031 Chinese landed; and yet this is by no means an insignificant number, and would tend to show that a large proportion came either *viâ* Mexico or provided with merchants' passports. On this point an American journal observed that since the passing of the Miller Bill all the Chinese immigrants who arrived in the United States were mandarins. It appears, however, that a revulsion of feeling has already taken place in the United States on the subject of Chinese immigration, and less stringent measures are now taken to prevent it; so it is far from improbable that long before the stipulated period of ten years has elapsed every port in the Union will be thrown open to Chinese immigrants.

In proportion to her population Canada is the country which has furnished the largest number of emigrants to the United States, but this is mainly owing to the numbers who arrive at their destination *viâ* Canada. This country is indebted to its own immigration alone for an average annual increase in her population to the extent of from 25 to 30,000 persons. It must however be added that no inconsiderable number of emigrants dissatisfied with their prospects in Canada leave that country for the United States, where they are attracted by the greater facilities which are offered for successfully establishing themselves, and where labour is not only in greater demand, but is paid for at a higher rate.

Coming next to the question of French emigration to the United States, we find that it has increased at the rate of only 44 per cent., but in considering the question of the causes generally, which have acted upon emigration this fact must not be overlooked, that since the year 1878 there has been a decided tendency to a deviation in the current of French emigration. On this point

we cannot do better than refer to the Report on Emigration for the years 1878-81, recently published by the Minister of the Interior; from this we find that the stream of French emigration instead of flowing as formerly towards the Argentine Republic, is now directed towards the United States. We have already called attention to the fact that this same peculiarity is observable in the case of Italian emigration, a deviation in the current from South to North America being particularly noticeable. It is a act greatly to be deplored that the French, as a race, are not more disposed to colonisation, and that this constant stream of emigration should flow always towards the United States instead of South America, a country which has been in existence so long, and which has done so much to extend and develop the trade of the Southern provinces of France, and more particularly the Department of the Basses Pyrénées.

It is a curious fact, and one worthy of comment, that the French are less disposed to emigrate than almost any other race, but this may be accounted for in a variety of ways. One reason is unquestionably to be found in the fact that the population in France increases by such very small annual movements, and is actually at the present day almost stationary, a fact which is causing considerable alarm, and is regarded with the greatest apprehension by many eminent French economists and statists. Other reasons to account for this peculiarity are very ably set forth by M. Simonin in his interesting work entitled, *A travers les États Unis, de l'Atlantique au Pacifique.* He says in this work, "The Frenchman who does not understand English, and who does not care to devote the time and study necessary to acquire a knowledge of the language, soon feels that he is perfectly isolated in the midst of manners and customs that are entirely strange to him. He misses his café, his theatres, his promenades, in a word he is entirely out of his element and thoroughly uncomfortable in this country where gossip and chit chat are unknown, and where people only appear to speak when there is absolute necessity for them to do so. He is ill at ease and full of complaint both of men and things, and his anger is particularly excited, and certainly not without cause, at the extreme dulness of the Protestant Sabbath, which is even rigorously observed in towns like Boston, San Louis, Chicago, and Philadelphia, on other days of the week so full of gaiety and animation. In New Orleans, originally a French city, and in San Francisco, though the Sunday is painfully dull, the inhabitants are not quite so disposed to observe it as a day of mourning, and this may probably account for the fact that the generality of French people emigrating to the United States make their homes here in preference to the other cities of the Union. In any case no Frenchman has the least intention of always remaining in America, each one cherishing the hope one day of returning to his *beau pays de France.* Holding the views that they do, it is evident that the French can never become *bonâ fide* colonists, and it is for this reason that not a single prosperous French settlement has ever yet been established in the United States."

We may here call attention to the fact that the observations we have made on the movement of emigration to the United States, and the deductions we have drawn, have been based solely on the official returns published by the United States Statistical Bureau. It may perhaps be as well, before forming any definite conclusions on the subject, to test the accuracy of these returns, and with this object in view we cannot do better than compare the figures as published by the United States Bureau with the statistical returns prepared in the different countries from which the immigrants arrive. The following tabular statement, distinguishing those countries in which returns of emigration are published, will show how far these two sets of figures agree :—

Years, ending 31st Dec.	Germany.		United Kingdom.		Sweden.		Norway.	
	German Returns.*	United States Returns.	English Returns.	United States Returns.	Swedish Returns.	United States Returns.	Norwegian Returns.	United States Returns.
1870....	76,455	91,779	153,466	151,089	15,430	12,009	14,788	12,356
'71 ..	73,816	107,201	150,788	143,937	12,985	11,659	12,055	11,307
'72....	120,056	155,595	161,782	157,905	11,838	14,645	13,081	10,348
'73....	96,641	133,141	166,730	159,355	9,486	11,351	9,998	18,107
'74....	42,492	56,927	113,774	100,422	3,380	4,336	4,565	6,581
'75....	27,834	36,565	81,193	66,179	3,591	6,031	3,972	4,465
'76....	22,767	31,323	54,554	42,243	3,702	5,204	4,313	6,031
'77....	18,240	27,419	45,481	35,566	2,921	4,774	3,195	4,333
'78....	20,373	31,958	54,694	40,706	4,242	6,176	4,833	5,216
'79....	30,808	43,531	91,806	78,424	12,761	16,659	7,607	9,488
'80....	103,115	134,040	166,570	164,438	36,275	46,723	19,615	23,054
'81....	206,189	249,572	176,104	165,230	40,620	55,892	25,956	26,967
'82....	189,373	232,269	181,903	161,428	Returns not yet published	60,413	Returns not yet published	27,197

Years, ending 31st Dec.	Denmark.		Italy.		Switzerland.		France.	
	Danish Returns.	United States Returns.	Italian Returns.	United States Returns.	Swiss Returns.	United States Returns.	French Returns.	United States Returns.
1870....	3,264	3,041	—	2,940	2,377	2,474	439	—
'71....	3,249	2,346	—	2,948	2,729	2,824	1,192	—
'72....	5,941	3,758	—	7,322	3,288	4,031	1,499	13,782
'73....	5,926	5,095	—	7,511	3,462	3,223	1,037	10,813
'74....	2,261	3,188	—	5,877	1,631	2,436	1,100	8,742
'75....	1,678	1,951	—	3,349	866	1,641	679	8,608
'76....	1,336	1,624	1,441	2,981	1,011	1,572	426	6,724
'77....	1,374	1,617	976	3,666	1,027	1,612	550	5,127
'78....	2,300	2,688	1,993	5,392	1,602	2,051	906	4,668
'79....	2,810	3,532	3,208	9,043	2,964	3,834	1,435	4,122
'80....	5,475	8,778	5,756	12,782	5,792	8,498	2,223	4 939
'81....	7,823	8,951	11,868	20,107	9,996	11,628	2,535	5,654
'82....	11,385	12,769	18,669	29,437	10,047	11,839	—	5,560

* The figures for 1870 are inclusive of emigrants who sailed from Hamburg, Bremen, and Stettin for the United States without distinction of nationality, and the figures for 1871 to 1882 refer to German emigrants leaving Hamburg, Bremen, Stettin, and Antwerp.

It would appear from the above that France is the only country in which any marked difference between the returns of the Minister of the Interior and the immigration statistics of the United States is observable, and there is reason to fear that in spite of all the precautions that are taken to obtain accurate and reliable returns of emigration in that country, the data supplied by emigration officers to the Minister of the Interior are both untrustworthy and incomplete.

It will be seen that there exists generally a considerable divergence between the returns of emigration as recorded in the countries of origin and the official immigration statistics of the United States; but when we consider the many difficulties that lie in the way of the accurate collection and compilation of the official immigration statistics in the United States, the enormous influx of alien passengers in all the ports of the Union, and the absence of passports, we cannot be surprised to find occasional errors appearing in these returns. As regards the absence of passports, it appears from inquiries which have been made on this subject that the majority of emigrants come unprovided with them, for the sufficient reason that many are flying from justice in their own country, or in some cases to escape the burdens of military service. Again, there are some who dispense with the formality of a passport to avoid expense; others omit to apply for them, and the omission is frequently caused by the fear that the Government would refuse them, and prevent the intending emigrants from leaving the country. We may add that emigrants are frequently encouraged by passenger agents to go without passports in order that they may more easily escape the vigilance of the local authorities.

It is evident that in the compilation of the nationality table in the United States immigration statistics mistakes cannot fail to occur, as owing to the frequent absence of any documentary evidence on the point, the authorities at Castle Garden and at the other ports of the Union have nothing to guide them beyond the language spoken by the immigrants, and it is left to their judgment to decide as to their nationality. This, at the best, is a most imperfect index of nationality, for there is a vast number of immigrants coming from Switzerland, the Netherlands, Austro-Hungary, Russia, and other countries, in which more than one language is spoken, and these persons, knowing the system of registration in vogue, give as their country of origin the one from which they imagine that immigrants are the most welcome; generally they fix upon Germany, as representatives from this country are as a rule in the United States, and particularly in New York, well to do and respected.

We will now take each of the countries distinguished in the table given above and see to what extent the two sets of figures disagree. In the case of Germany, we find that the figures supplied by the German Statistical Bureau are much lower than those published in the United States returns, 189,000 as compared with 232,000 in 1882; but this is in great measure to be accounted for by the reasons we have enumerated above, and at the same time it tends to prove how incomplete are the data in the possession of the

German authorities on the subject of the current of German emigration from Havre, Rotterdam, and Marseilles, chiefly flowing from the south-west districts of Germany.

The figures published in the English emigration returns are on the contrary higher than those shown in the American return, 182,000 against 161,000 in 1882, and the explanation of this discrepancy lies in the fact that a considerable number of English emigrants declare their destination as the United States, and immediately on their arrival at New York they proceed by the Grand Trunk line to Montreal, Quebec, and Toronto. These persons are not included among immigrants in the United States official returns, only those who declare their intention of settling in the country being distinguished in the tables showing the nationality of the arrivals in the various ports of the Union.

The discrepancies between the Swedish, Norwegian, Danish, and Swiss returns and the United States figures are very trifling, but there is a very wide difference existing between the Italian and American returns, the latter being considerably higher than the former. The explanation of this is very simple, and is to be found in the unsatisfactory system of registration employed in Italy. It appears that the only method of arriving at the number of emigrants leaving the latter country is from a return of the passports issued, and in default of passports, from "public notoriety;" this public notoriety consists of an inquiry made by the syndics and local authorities with a view to obtain information as to the number of persons leaving the country without first applying for passports. There can be no diversity of opinion as to this unsatisfactory and incomplete method of obtaining returns. Another reason which may be offered to account for the difference between the Italian and American figures is the following: many Italians leave for France, Switzerland, and Austria, with the intention of returning after a short stay to their own country; but not finding sufficient inducement to remain in these countries, they are tempted to seek their fortunes in more distant lands, and sail from Marseilles, Bordeaux, Havre, and Trieste.

As regards France there is a very considerable divergence between the returns of departure for and arrivals at the United States, to be accounted for in great measure by the numbers of French emigrants who, with the object of evading the vigilance of the authorities leave in unregistered vessels. It is a curious fact that as a general rule a Frenchman is so averse to declaring himself an emigrant, that he frequently prefers to travel in a third rate vessel, and suffer the miseries of a steerage passage, rather than make his declaration in due form to the *Commissaires des Ports*.

The annual report of the Emigration Commissioners of the State of New York gives some interesting details on the subject of the distribution among the different States of the Union of the emigrants who landed at New York during the fiscal year 1882. Exception may perhaps be taken to these figures, as they relate only to those emigrants who landed at the port of New York, but when we consider that the number of arrivals at that port represents rather more than three-fifths of the total emigration to the United

States, it is obvious that the returns will convey a very approximate idea of the distribution of immigrants generally among the various States of the Union:—

States.	Number of Immigrants.	Proportion per Cent. of Total Number.
New York	166,824	35
Illinois	51,331	10
Pennsylvania	46,398	9
Wisconsin, Ohio, Minnesota, Michigan, Iowa	24,000 to 17,000	5 to 3
Massachusetts	15,000	3
New Jersey	11,849	2
Missouri	9,350	2
Connecticut	8,000	1·6
Nebraska, Indiana, Dakota	7,000 to 3,000	1·4 to 0·6
California	4,500	0·9
Utah	2,700	0·5
Rhode Island	2,400	0·4
Colorado	2,000	0·4
Kentucky	1,350	0·2
Louisiana	700	0·1

It will be seen by reference to the above table that 35 per cent. or one-third of the total number of immigrants into the United States remain in New York, 20 per cent. find their way to the agricultural and grain producing districts of the west, Illinois, Wisconsin, and Ohio, 10 per cent. go to the industrial State of Pennsylvania, one of the richest in the Union, and abounding in coal and iron. The remainder appear to be attracted by the spinning mills of Massachusetts, about 3 per cent. leaving for this State, 4 per cent. go to Minnesota and Michigan, and 2 per cent. to Missouri and Connecticut, and finally a certain number of emigrants go to the far west, directing their steps principally to Dakota, Nebraska, Colorado, and Utah city.

It is a noteworthy fact that these estimates which have been formed of the distribution of immigrants into the United States, based on the New York returns, agree almost exactly with certain tabular statements published by the Washington Statistical Bureau showing the distribution of the alien population over American territory in 1880.

It results from an examination of these two statements that the tendency of emigration is strongly northward and westward, where the climate is more akin to that to which the emigrants have been accustomed, the majority consisting principally of Irish, English, Germans, and Scandinavians. The community of labour, which even at the present day largely prevails in the old slave States, is repugnant to the feelings of men who are desirous of retaining their independence. Another reason for this current may be that in the

northern and western States, land is granted on the easiest terms, while in the south it commands a high price. Again it must be borne in mind that there is almost an utter absence of security both as regards life and property in some States, particularly in Georgia, Tennessee, and South Carolina, where a spirit of lawlessness largely prevails, murders are committed with impunity, and justice obtained through the medium of the revolver, the most baneful relic of the slave ages. Cases have been known to exist where Swedish immigrants who have settled in the State of Mississippi, and established a prosperous business there, have been compelled for these reasons to break up their homes, sell their business frequently at a ruinous sacrifice, and begin life again in the north.

By far the greater number of emigrants to the United States, or about 60 per cent., land at Castle Garden, formerly an old fort built on the Hudson River to defend the harbour of New York, now turned into a depôt for the reception of passengers. Out of a total of 720,000 emigrants, 455,681 landed here during the fiscal year 1881, and 476,080 out of a total of 789,000 in 1882. In the course of the latter year as many as 8,000 emigrants have been known to land at Castle Garden in one day.

When an emigrant ship arrives within a distance of six miles from Castle Garden, at the entrance of the Bay of New York, it is visited by a medical officer of health, and afterwards by an officer of the metropolitan police, to whom any complaints that the emigrants may have to make are reported. The emigrants are landed in the presence of an officer of customs, who is in charge of the examination of the luggage and effects, and of a doctor whose duty it is to see that the invalids and insane are at once sent to the hospital on Ward Island.

The emigrants on landing are received in a vast rotunda, surmounted by a dome 75 feet high, which forms the centre of Castle Garden; each person is then required to state his name, profession, last place of residence, and destination, and it is on the basis of this information that the immigration statistics which are periodically issued by the United States Statistical Bureau are compiled. An office is provided which is called the railroad department, where railway tickets may be obtained at reduced rates; and in some cases, when it is found that the applicants are entirely without resources, these are granted free of cost. The luggage is then collected in a large hall called the baggage room, which is capable of storing over 15,000 packages. There is also an exchange office, where bank notes and coin can be exchanged for American money at the current rate of exchange, averaging about 1 per cent. in favour of the money changer.

The immigrants are again collected in the central rotunda, and those who are desirous of obtaining information respecting their relations and friends are referred to the "General Information Department," and those who have letters or remittances to send, to the "forwarding room." There is a post office, a telegraph office, and a "letter writing department," in which a number of clerks are employed to write in every language at the dictation of the

immigrants. A well-appointed dressing-room is also provided for the accommodation of immigrants, and a good restaurant at which the prices are very moderate, and where refreshments are even supplied gratis to those who are without the means of paying for them; and finally there is an office called the "labour exchange," where places are procured for immigrants, about one-seventh as a rule being provided with situations through its agency.

Before the year 1818 emigrants on their arrival at New York actually sold themselves and lived in a state of slavery lasting sometimes from ten to fifteen years, in order to provide themselves with the means of paying off the expenses incurred in their passage over to the States, and the advances which had been made to them.

In 1819 a law was passed entitled the Passenger Act, which decreed that no vessel should carry more than two emigrants for every 5 tons measurement, and laid down certain rules as to the quantity of fresh water and provisions to be taken on board by each emigrant ship. The same law also provided for the annual publication of immigration statistics.

In the year 1847, at the instigation of New York State, a Commission was appointed, called the Board of Commissioners of Emigration, to supervise the reception and protection of immigrants, and an inspector was appointed under the title of General Agent and Superintendent, whose duty consisted in centralising the operations of the Commissioners. In the same year the hospital which is situated on Ward Island was established for the reception and treatment of aliens.

In 1855 Congress passed a law rendering it compulsory for each emigrant to have at least 70 cubic feet of space, and laid down certain rules regulating the ventilation of vessels and the provisioning of passengers; and under this law the Emigration Commission was established at Castle Garden. From 1847 to 1876, in order to provide for the funds required by this Commission, it was decreed by the State of New York that a sum of from $\$1\frac{1}{2}$ to $\$2\frac{1}{2}$ should be levied on each immigrant landing, the amount being paid by the shipping companies. It being decided, however, by the Supreme Court of the United States in 1876 that this law was null and void, this poll-tax was replaced by subventions voted by the State of New York. At the present moment the question as to whether the expenses incurred in the reception of immigrants should fall upon the State of New York or be borne by the Union generally is actually before Congress.

The Commission has established on Ward Island a hospital, a lunatic asylum, a *crèche*, apartments for the superintendent, two chapels, one for Protestants, the other for Catholics, and many other buildings of minor importance. Until the year 1882 the hospital was always full, and many deserving cases had to be refused, the reason being that the law recognised as aliens those who had been domiciled less than five years in the United States. At present they cease to be considered as aliens after a residence of twelve months, so that persons who have lived in America for a period exceeding one year, instead of being removed in the case of

illness or insanity to the institutions belonging to the Emigration Commissioners, are referred to the New York authorities, and dealt with by the relieving officers of the city. The American press is unanimous in its praise of the Ward Island establishments, and speaks in the highest terms of the purity of the air there, the cleanliness of the beds, the excellence of the living, and the efficiency of the medical staff.

The *New York Times* of 17th December, 1882, published some very valuable statistical information on the subject of the Ward Island institutions, and from this source the following table has been compiled, which may be interesting as showing the number and proportion of immigrants of different nationalities who were admitted into hospital after landing at New York, and who died there :—

Nationality.	Number of Immigrants.			Proportion of Immigrants.	
	Landed at New York.	Admitted into Hospital.	Died in Hospital.	Received into Hospital to every 100 Landed.	Died to every 100 Admitted into Hospital.
German	198,468	2,243	153	1·13	6·82
Irish	52,768	704	41	1·72	5·82
English	40,849	193	14	0·47	7·25
Italian.....	27,484	666	73	2·42	10·96

It will be seen from the above that the Italians appear to be the greatest sufferers through disease and death, and this is probably due to the fact that from Italy immigrants are more susceptible to the change of climate than the Germans and English, and are more predisposed to pulmonary diseases.

The statistics of mortality at Castle Garden comprise (1) the deaths which occur the day previous to the arrival of the vessel in harbour, or at the port itself; (2) those which have taken place among the invalids at the moment of their reception at Ward Island; and (3) those which have occurred among the immigrants after their admission and during the time they are in-patients at the hospital. The following table will show the mortality among immigrants during each of the five years ended 30th June, 1882 :—

Years.	Total Number of Immigrants.	Number of Deaths in Harbour of New York.	Number of Deaths on Admission to Hospital.	Number of Immigrants Admitted to Hospital.	Number of Deaths among Immigrants in Hospital.	Proportion of Deaths to every 100 Immigrants.
1878....	75,000	2	3	2,175	78	3·58
'79....	135,000	13	3	2,460	98	3·98
'80....	327,000	91	18	3,412	199	5·83
'81....	445,000	148	55	6,824	357	5·26
'82....	476,086	243	75	6,079	532	8·75

We see by this table how very great is the mortality generally among emigrants, and it must be observed that in addition to the

number given above, there should be added the hundreds of alien passengers who died on the voyage and were buried at sea—578 in 1882 and 465 in 1883. The above table also shows how great the number is of those who succumb to the fatigues of the journey, and who do not live long enough to reach even the quarters assigned to them in the hospital, and it proves how necessary it is for the passage to be effected as rapidly as possible and under the most favourable conditions.

The proportion of deaths among the immigrants admitted into hospital shows a considerable falling off, for while in 1852 it was established at the rate of 11 per cent., it varied from 1877 to 1882 between 3 and 8 per cent. only. This diminution may in great measure be due to the substitution of steam for sailing vessels employed in carrying emigrants, and also in some slight degree to the improvements that of late years have been effected in the Ward Island institutions themselves. In fact, improvements of every description have lately been made at Ward Island. As we have already shown, non-emigrants have been excluded, patients suffering from contagious diseases have been isolated; in the obstetrical wards midwives have been replaced by doctors, and this alone has had a considerable effect in causing a diminution in the number of still births: the average proportion of the latter, instead of being at the rate of 7·60 per cent., which was the average annual proportion for the period comprised between 1861 and 1881, falling as low as 4·88 per cent. during the year 1882. And finally the care of all the children has now been confided to nurses.

The above is a brief sketch of this important establishment at Castle Garden—an institution which has done so much to develop immigration into the United States. France might well with advantage follow the example of the United States, and encourage immigration into her own colonies, if not to Algeria, at least to her more distant possessions; those in the extreme west for instance, where the peaceful merchant and the industrious colonist should follow in the wake of her victorious columns.

II.—*A New Industrial Inquiry.* *By* Frederic Harrison, Esq.

The following is taken from the *Pall Mall Gazette* of 8th September, 1884:—

"As I have known something of the projected conference on industrial questions from the first, I may be permitted to say a few words as to its scope and nature. A gentleman of Edinburgh, who prefers to remain anonymous, some time ago consulted several persons known to take an interest in industrial problems as to how he could best devote a certain portion of his fortune, so as 'to make some provision for keeping before the public mind this vital question, namely, *What are the best means, consistent with equity and justice, for bringing about a more equal division of the accumu-*

lated wealth of the country, and a more equal division of the daily products of industry between Capital and Labour, so that it may become possible for all to enjoy a fair share of material comfort and intellectual culture, possible for all to lead a dignified life, and less difficult for all to lead a good life?' He received in reply various suggestions, and after long deliberation he decided to name trustees to whom he should make over an ample fund, authorising them to arrange in any way they thought best for the holding of a public conference on some definite industrial question, limiting the discussion to a moderately small number of representative men, nominated by well known bodies having an industrial interest from many different sides. The original trustees are Sir Thomas Brassey, Mr. J. Burnett, of the Engineers' Society, Mr. T. Burt, M.P., Lord Dalhousie, Mr. Robert Giffen, President of the Statistical Society, Professor H. S. Foxwell, of Cambridge, and Mr. Frederic Harrison. The seven trustees held a series of meetings wherein they considered the best means of giving effect with complete impartiality to the purpose of the trust. This was simply to keep before the public mind the enormous disparity of comfort resulting from our modern industrial life; which is, as the original letter puts it, 'at once a great evil in itself and a great danger to the commonwealth.'

"There are never wanting of course inquiries and discussions as to alleged defects in our industrial system; but they are not always fruitful in result, and they usually start from preconceived doctrines, and represent one side or one interest. The trustees have sought to originate an inquiry which should not start from any doctrine, and which should be open to all interests. They have sought to reduce to a minimum that inevitable part of every inquiry into these wide questions which is desultory, unscientific, anarchical, or doctrinaire. They would wish to have the debate limited to those who have something to tell us that will stand sifting; and at the same time they would not exclude from a fair hearing any serious opinion or school. It seemed to them that these conditions would be best attained if they proposed to one of the established associations to undertake the inquiry, with a special committee and fund. Ultimately the Statistical Society undertook the task, and named a sub-committee for the purpose. As the published list will show, the committee now includes the names of men known as trained officials and administrators, statisticians, and economists; leaders of the workmen's movements and societies; men representing great estates, and men representing popular constituencies; as well as several of the economists of the younger school, both at Oxford and at Cambridge, who have applied themselves so ardently to social problems. The idea in forming the committee was to ensure the presence of men trained to business and scientific statistics, who should be ready to look at these questions from the point of view of labour as well as capital, and who would not come to the inquiry with any hide-bound doctrines whatever.

"After much deliberation the scheme of inquiry adopted by the committee is this. They would begin by holding a conference con-

sisting of about one hundred and fifty members, not casually selected from a body of subscribers, much less open indiscriminately to all comers, but consisting entirely of delegates selected by a great many public associations representing labour as well as capital, or occupied in the investigation of industrial questions. Thus trades unions and chambers of commerce, co-operative and economic societies, together with all similar associations dealing with industry either in the interest of the workman or the employer, or in the interest of society generally, would be invited to name representatives to the conference. And alongside of this, and the public discussion of such questions, the committee would invite papers for publication, and endeavour to collect trustworthy returns on selected points. After the conference is concluded, the scheme contemplates the publication of the discussions, together with such papers, returns, and other information as may appear to be worthy of a permanent form. In this way, it is hoped, something may be done to form materials for a practical handbook on industrial problems, the result of the work of many minds, dealing with the subject under very different conditions. The type to which such a volume or volumes would belong is the very remarkable and authoritative Report on Trade Societies issued by the Social Science Association in 1860. That volume was the real source of almost all the knowledge before the public down to the reports of the royal commission in 1867-69, which indeed in no way superseded its usefulness. It is remarkable how many of the men who worked on that committee of 1860, and prepared the volume that resulted from its discussions, have since been eminent in the service of the State or in the cause of science. When men like Mr. Fawcett, Mr. Forster, Mr. Shaw Lefevre, and the late Charles Buxton, Frederick Maurice, and Professor Jevons combined their experience in one joint investigation, the result was at once impartial and trustworthy.

"Whether the inquiry about to be undertaken will bear fruit in similar usefulness will depend on the answers given to the invitations by the public bodies and eminent authorities to whom they are addressed. The subject is of course in one sense a more difficult one to grasp, because it is not confined to the associations of a particular class, but relates to the field of labour in general. For the details of the scheme now submitted to the public the original trustees are not as a body responsible, and by devolving their trust for execution on the Statistical Society, and its sub-committee, they have ceased directly to control the organisation. But it is their earnest hope that some little thing may be done to keep before the eyes of the public the need of unremitting effort to mitigate the acknowledged dangers which beset our industrial life. Men like Mr. Burt and Sir Thomas Brassey, Mr. Burnett and Mr. Giffen, view that industrial life from very different points of view, and they often differ widely as to what the dangers are, and how they could be lessened. But they have felt, like all their colleagues in the trust, and of the special committee of organisation, that they ought not to decline the task thrown on them by a man of generous public spirit, who is as completely free from any personal object in founding this trust as they are themselves in accepting it. And I

believe that they all agree with him when he says that 'wealth, luxury, and extravagance among the few, accompanied by poverty, misery, and want among the many, is at once a great evil in itself and a great danger to the commonwealth.'"

III.—*The Fate of the Divorced. By* Dr. Jacques Bertillon. (*Translated from the Journal de la Société de Statistique de Paris, June*, 1884.)

It has frequently been asserted, without, be it observed, a shadow of proof to substantiate it, that second and subsequent marriages are seldom contracted by persons who have been divorced, and when such marriages do occur it is only when they have been actually in contemplation before the decree annulling the first marriage was pronounced, and that it is greatly to be feared that in many cases the divorce has been effected for the very purpose of forming such unions. To be able to speak with any degree of certainty on this point we must first compare the marriage rate of *divorcés* with that of other persons, and above all it is necessary that this comparison should be made *age by age*. Proceeding on this method we have arrived at the following results. Taking first the males, we find that the marriage rate of widowers is three, four, and sometimes as much as five times higher than that of bachelors of the same age. It would be impossible here to go very deeply into the question of the causes of this law, as space will not permit of it, and the subject has already been exhaustively dealt with, considerable attention having from time to time been devoted to it in the reports of the Anthropological Society of Paris.

As regards divorced men, their marriage rate is singularly low in the earlier ages; later it appears to be between that of widowers and bachelors; and it is by no means uncommon to find in old age that it is considerably higher than the marriage rate even of widowers.

The same phenomenon is observable in the case of females, only the difference in the rates of the three civil conditions are less marked than in the male rates. The figures given in the following table, which relate to two countries in all other respects widely differing, will show how far we are justified in arriving at the above conclusions, and at the same time they show very clearly that the law to which we have called attention is moreover of a general character:—

Out of every 1,000 *Persons of each of the undermentioned Categories of Age and Civil Condition, the Proportion Annually Marrying in the Netherlands.*

(Period of observation 1855-64.)

Ages.	Males.			Females.		
	Bachelors.	Widowers.	Divorced.	Spinsters.	Widows.	Divorced.
20 to 24	46	213	33	75	118	37
25 „ 29	111	327	183	115	157	110
30 „ 34	112	356	186	101	144	87
35 „ 39	78	276	271	65	98	121
40 „ 44	51	194	280	40	58	103
45 „ 49	32	116	160	21	31	47
50 „ 54	17	65	158	9	13	19
55 „ 60	8	33	29	3	5	24

Out of every 1,000 *Persons of each of the undermentioned Categories of Age and Civil Condition, the Proportion Annually Marrying in Switzerland.*

(Period of observation 1879-82.)

Ages.	Males.			Females.		
	Bachelors.	Widowers.	Divorced.	Spinsters.	Widows.	Divorced.
Under 20 years	5	—	—	16	56	—
20 to 24	49	175	167	82	113	119
25 „ 29	103	280	262	103	109	168
30 „ 34	83	275	243	65	89	134
35 „ 39	55	206	170	40	63	87
40 „ 44	32	150	120	24	35	70
45 „ 49	19	97	93	14	20	39
50 „ 54	11	60	73	6	9	22
55 „ 59	6	37	39	2	4	9
60 „ 64	4	22	29	1	2	4
65 „ 69	2	10	20	—	1	—
70 and above	1	2	5	—	—	—

It is evident therefore that second and subsequent marriages of divorced persons are by no means uncommon, and the above tables show that the number of such marriages is greater even than those contracted by bachelors.

There appears to be no room for doubt that a connection exists between the marriage-rates of widowers and *divorcés*, and that they are both influenced to a great extent by the same causes. It might well be imagined that other influences have been at work, and that a considerable number of persons have been actuated in applying for and obtaining a dissolution of their first marriage by the desire of contracting a subsequent one. As a means of ascertaining whether the grounds for this supposition are well founded or the reverse, we cannot do better than look into the question of the length of time that has elapsed between the divorce and the subsequent marriage. If the second marriage is contracted

for reasons similar to those which influence the marriages of widowers, it is obvious that the average duration of the period intervening would be very nearly the same in each case; but, on the contrary, if the divorce was effected for the purpose of contracting a subsequent marriage, it is clear that the second union would follow very closely on the dissolution of the first. In this case we ought to discover that divorced men marry more quickly than widowers; but as a matter of fact this is not so, as the following table, which has been prepared from the statistical returns of Switzerland, shows that the period intervening between the first and subsequent marriage of divorced men and of widowers is almost identical.

(Period of observation 1879-81.)

Period elapsing between the Dissolution of the First and the Contraction of the Second Marriage.	Males.		Females.	
	Widowers.	Divorced.	Widows.	Divorced.
Less than 1 year	32·3	30·0	9·5	19·4
1 year	26·0	25·5	26·4	28·2
2 years	13·6	15·1	15·2	16·6
3 „	8·2	10·6	13·2	12·7
4 „	4·8	5·3	9·1	6·8
5 to 9 years	10·8	10·1	19·6	12·5
10 years	4·3	3·4	7·0	3·8
	100·0	100·0	100·0	100·0

It will be seen by the above, that as regards the men the figures are almost identical, and we find that widowers and divorced men appear to be equally precipitate in contracting fresh alliances, and that divorced women marry more quickly than widows.

As a means of verifying the results shown in the preceding table, we may refer to the following statement prepared from the statistical returns of the town of Berlin, which entirely confirms them, and establishes the general character of this rule:—

(Period of observation 1878-80.)

Period elapsing between the Dissolution of the First and the Contraction of the Second Marriage.	Males.		Females.	
	Widowers.	Divorced.	Widows.	Divorced.
Less than 1 year	33	37	11	22
1 year	25	24	25	27
2 years	10	11	16	12
3 „	7	7	12	8
4 „	4	4	8	6
5 „	2	3	6	5
Above 5 years	8	10	17	15
Duration unknown ...	6	4	5	5
	100	100	100	100

Looking next into the question of the suicides of divorced persons, it may be laid down as a general maxim that in those countries in which suicides are numerous, conjugal dissensions are also of frequent occurrence. This has been clearly shown to be the case in the majority of the French departments, and in many European countries; and inquiries which have been made into this particular subject in the different Swiss cantons have resulted in conclusively establishing the fact. This somewhat singular phenomenon may be capable of explanation in the following way: When the population of any country contains a large proportion of persons suffering, for example, from melancholia, or other cerebral disease, the returns of mortality in that country must show not only a large proportion of deaths from suicide, for suicide may in the majority of cases be first traced to disease, but also of divorces, for life passed with a person of morbid disposition, or suffering from cerebral disease, must soon become insupportable.

If it be true that the number of divorced men (and we refer more particularly here to those who have rendered married life intolerable to their wives) is composed largely of that class which may be considered as suffering from a species of cerebral disease, and that this disease predisposes them to suicide, it would be only fair to assume that there would still be a tendency to suicide on the part of those men whose marriages had been dissolved; in fact this has been conclusively proved to be the case. Again, though it is an established fact that suicides are of far more frequent occurrence among bachelors than married men, and widowers than bachelors, it is not so generally known that the mortality from this cause among divorced men is very much greater than among widowers. On this subject the following table, which we have prepared from the statistical returns of Switzerland for the period comprised between the years 1876 and 1881, will throw a very significant light, it being the more interesting as the ages are in each case particularly distinguished:—

Average Annual Number of Suicides committed in Switzerland to every 100,000 *Persons of each Age and Civil Condition.*

Ages.	Males.				Females.			
	Bachelors.	Married.	Widowers.	Divorced.	Spinsters.	Married.	Widows.	Divorced.
10 to 14	1·3	—	—	—	0·2	—	—	—
15 „ 19	15·1	—	—	—	4·7	10·2	—	—
20 „ 29	45·5	30·5	—	167·6	8·7	4·4	17·5	—
30 „ 39	73·8	43·4	129·7	96·8	15·7	6·6	12·5	20·5
40 „ 49	97·0	52·1	109·2	426·2	13·9	7·3	16·6	102·1
50 „ 59	98·5	62·2	187·8	245·6	7·5	8·0	18·2	49·2
60 „ 69	100·5	63·0	185·6	445·7	11·8	13·0	10·2	—
70 „ 79	59·8	42·6	95·0	176·5	12·4	8·6	14·0	—
80.....	46·0	12·2	69·0	—	—	—	6·0	—

We may here call attention to the fact that these figures do not present the same unvarying regularity which would be noticeable if

the observation were carried over a more extended period, but they show very clearly that the tendency to suicide on the part of men who have been divorced is more pronounced than that of widowers.

Coming next to the question of crime among *divorcés*. Here we cannot lay too much stress upon the fact, that if the tendency to suicide is to be attributed to an abnormal condition of the brain, the tendency to crime must assuredly also be attributed to the same cause. Many valuable works have been published by eminent scientists, who have made a speciality of brain diseases, among others we may mention the works of Drs. Bordier and Maudsley, to clearly establish the relation of crime to madness, and more particularly to temporary insanity. For this reason we are the more disposed to look closely into the question of the criminality of divorced persons, and to see whether there is a greater tendency on their part to crime than on the part of bachelors, married men, and widowers, and with this object in view we cannot do better than again refer to the very excellent Swiss statistical returns, which will throw a very significant light upon this question.

M. Kummer, the chief of the Swiss statistical bureau, has collected some very valuable information bearing upon the age and civil condition of criminals who were committed to the penal establishments of Switzerland in 1874. The returns for the cantons of Vaud and Soleure are unfortunately wanting, no data on this subject being available in these two districts. On the basis of this information the following tabular statement has been prepared:—

Number of Male Criminals, distinguishing their Ages and Civil Condition, Committed to Penal Establishments in Switzerland during the Year 1874, *to every* 10,000 *of the Population.*

Ages.	Bachelors.	Married.	Widowers.	Divorced.	Average.
16 to 20	5	—	—	—	5
21 „ 30	14	5	25	196	12
31 „ 40	15	5	12	97	9
41 „ 50	15	5	6	25	7
51 „ 60	10	3	7	41	5
61 and above	5	1	1	18	2
16 to 61 and above....	11	4	4	58	8

A glance at this table will be sufficient to show that the proportion of crime committed by divorced men is from eight to ten times greater than the general average, and this in itself is a sufficient confirmation of the opinion we have expressed on this subject. We find among divorced men a decided tendency to suicide and a decided tendency to crime—both clearly traceable to a disordered state of the brain. If additional proof of this is necessary it may easily be found in an examination of the returns of mortality among *divorcés*.

We find from an examination of the returns of mortality generally, that as regards the male portion of the community, at

each age after the twentieth year of life, the death-rate is higher among bachelors than married men, and of widowers than either; and the same rule would appear to apply equally to females, only in their case the difference between the three civil conditions is much less marked, and distinguished by a lesser degree of constancy.

We will now look into the question of mortality among the divorced, examining age by age, this being an essential point.

Proportion of Deaths Annually occurring in Switzerland to every 1,000 *of the Population, arranged according to Age and Civil Condition.*

(Period of observation 1880-81.)

Ages.	Males.				Females.			
	Bachelors.	Married.	Widowers.	Divorced.	Spinsters.	Married.	Widows.	Divorced.
15 to 19	4·8	3·7	—	—	5·3	8·6	—	—
20 „ 24	7·2	6·7	8·7	16·4	6·2	8·5	6·4	7·4
25 „ 29	9·6	6·3	12·0	23·0	7·2	9·1	10·1	5·3
30 „ 34	11·9	7·7	16·4	30·2	8·8	9·2	8·8	14·3
35 „ 39	15·0	9·9	19·4	33·5	10·4	10·6	10·7	12·6
40 „ 44	17·0	11·7	18·5	31·5	12·6	11·2	10·0	14·8
45 „ 49	21·5	14·8	22·6	42·5	18·0	11·1	13·4	16·5
50 „ 54	26·4	20·1	29·1	45·2	21·3	15·4	18·5	24·3
55 „ 59	37·7	26·7	36·0	57·9	27·9	22·1	25·1	35·8
60 „ 64	48·9	35·7	46·4	58·8	40·9	34·0	36·8	51·0
65 „ 69	69·5	51·3	71·5	64·5	61·0	53·9	57·6	61·1
70 „ 74	103·5	79·4	93·7	119·0	93·6	83·4	85·1	83·3
75 „ 79	128·4	109·4	131·6	129·5	119·9	110·4	121·9	129·5
80.....	195·6	172·1	194·5	365·9	197·4	167·4	182·8	283·6

This table, which has also been prepared from an examination of the Swiss returns, is only based on the observation of two years, but it shows very conclusively how very high is the death-rate of *divorcés*, and confirms the opinions we have already expressed on this subject. It is difficult to believe that such an excessive mortality has really a foundation in fact! Between the three other civil conditions we find differences both remarkable and constant, but they are dwarfed into insignificance when compared with the difference between the death-rates of *divorcés* and persons in the other civil conditions of life. Up to the fiftieth year of life the death-rate of *divorcés* is three and four times higher than that of married men and even bachelors of the same age, and it is greatly in excess of that of widowers.

It would be interesting to discover whether the difference of civil condition, that is the difference in the manner of life, is sufficient to account for this extraordinary phenomenon; we are of opinion that this excessive mortality among *divorcés* is abnormal, that it is in fact a mortality of invalids.

We must now revert to the consideration of the question, as to how far cerebral disease to which we have attributed the moral and intellectual disorders of *divorcés* is to be held accountable for this exceptionally high rate of mortality. On this point statistics

would be eminently useful in throwing a significant light upon the subject, and we are disposed to believe that if a table were drawn up showing the causes of death, age by age, and arranged according to civil condition, it would conclusively show that disorders of the nervous system are of far more frequent occurrence among *divorcés* than among either bachelors, married men, or widowers.

It has been shown by the very high marriage-rate of divorced persons, that there exists even among those who have been unfortunate in their married life a decided tendency to contract fresh unions, and we may reasonably assume that the same rule applies equally to those who in default of any law of divorce have mutually agreed upon a separation, only in their case the subsequent union is not a legal one.

On this point however we can do no more than call attention to it, as there is an absence of any statistical data bearing upon the subject.

We will next devote some consideration to the question of the tendency to crime among ill-assorted couples in France. How frequently do we take up the newspapers to find the report of some dreadful crime committed by a confirmed drunkard, who in a paroxysm of rage plunges a knife into his wife's body, or the history of some wretched woman, a prey to grief and hatred, who ends by poisoning her husband? Or again, we read an account of some miserable ruffian who after repeatedly threatening his wife, eventually puts his threat into execution. All this is too plainly evidenced by the statistics of crime, which show of what frequent occurrence such domestic dramas are in France, and all because the law refuses to sanction the dissolution of the union between an honest hard working woman and a brute! The figures shown in the following table are truly appalling, and although we are not at the moment in possession of any authenticated official information bearing upon this subject in other countries, we cannot but incline to the opinion that it would be impossible to find throughout the whole of Europe such a terrible record of crime as this.

Out of every 100 *Crimes of the Three undermentioned Categories Committed in France, the Numbers attributable to the following Causes.*

(Period of observation 1876-80.)

	Murders.	Assassinations.	Poisonings.
Domestic dissensions	21	22	43
Adultery	2	5	10
Debauchery	7	10	—
Incontinence	14	25	9
Revenge	20	22	9
Drunken quarrels	10	16	29
Chance brawls	12		
Other causes	14		
	100	100	100

We find therefore from the above that the primary causes of 25 per cent. of the whole of the murders and assassinations committed in France, and of 50 per cent. of the poisonings, are domestic dissensions and adultery, and no more forcible argument than this can be adduced in favour of the re-establishment of the law of divorce in France.

Finally we come to the question of the proportion of suicides among ill-assorted couples in France, and as we find it so conclusively shown that such a vast number of persons through domestic unhappiness are prompted to the commission of atrocious crimes, it is only reasonable to assume that many others yielding themselves up to despair are driven by the same cause to put an end to their existence. The criminal statistics of France tell us that in that country, out of every 100 suicides, 14 are due to domestic dissensions, and this is a higher proportion than is to be found in any other country in Europe, the only one approaching it being Italy, where the law does not recognise divorce, and here the proportion of suicides from these causes is in the ratio of 9·6 per cent.

IV.—*Catalogue of the Library of the Statistical Society.*

The Council have much pleasure in announcing that the Library Catalogue is now ready for issue, and a copy will be forwarded to any Fellow of the Society who may not already have received one, on application, accompanied by the sum of *9d.* in postage stamps, to cover the expense of delivery by parcels post.

It is hoped that the Index, forming a companion volume, will be ready before June next; it will be issued to Fellows on similar terms.

The following is the Preface to the Catalogue:—

"The Library of the Statistical Society, whose functions are to observe and record facts relating to the condition and progress of society, must needs be rich in works of a solid character, the writings of observers and statisticians of all times and countries. And the works it has accumulated, now numbering well nigh 20,000 volumes, embody facts of a physical and vital, mental and moral, social and economical, commercial, industrial, and financial character, of great value, not only to the politician, the economist, and the historian, but to every accurate writer and reasoner.

"A glance at the pages of this Catalogue will suffice to indicate how varied and thorough is the statistical information now collected, and with what vigour the science is pursued under the superintendence of the State, and still more by the labours of men of science. Whilst the Astronomer expands our knowledge of the meteorology and magnetism of the universe, and the Geographer explores for us unknown regions, and makes us acquainted with the habits and wants of distant races, the Statistician labours to evolve the principles of those sciences which govern alike the phenomena of the material universe and the practical problems of the law of probabilities, and subjects the real worth of economic

doctrines to the close test of numbers, and to the great corrective of experience and facts.

"The Library of the Statistical Society has grown to considerable dimensions since the last Catalogue was published in 1859. The International Statistical Congress, held under the auspices of the different Governments in Brussels, Paris, Vienna, London, Florence, The Hague, Berlin, St. Petersburg, and Budapest, brought the Statistical Society into contact with the Statistical Bureaux and leading statisticians of all countries, and the Official Publications of the following States are now regularly received in the Library, viz.:—Argentine Republic, Austria and Hungary, Bavaria, Belgium, Brazil, Bulgaria, China, Denmark, Egypt, France, Germany, Guatemala, Italy, Netherlands, Norway and Sweden, Prussia, Portugal, Roumania, Russia, Saxony, Spain, Switzerland, United States of America, and Uruguay. So also are the Official Publications from the various departments of the United Kingdom, and from the Indian, Colonial, and other Possessions of the British Empire.

"The resources of the Library will be best appreciated by reference to the names of different States, and to those of the many eminent Statisticians and Economists whose works it contains. Thus under the heading of Italy will be found Official Publications relating to Climatology, Meteorology and Topography, Population and Anthropometry, Instruction, elementary and technical, Judicial proceedings and Crime, Mining, Commerce, Industry and Navigation, and communal, provincial, and national Finances; whilst the 'Annali di Statistica' and 'Archivio di Statistica' are full of papers on philosophical, statistical, and economic questions.

"Under the heading of Names of Authors, there will be found, among many others, the writings of Sir Josiah Child, Dr. Farr, Stanley Jevons, Malthus, William Newmarch, Sir William Petty, G. R. Porter, Adam Smith, Thomas Tooke, Arthur Young; Balbi, Michel Chevalier, Engel, Fallati, Quetelet, Say, Wagner, Wells, Wolowski.

"On the subject of the Currency, the student will find, among others, the writings of Sir Francis Baring, Canning, Lord Castlereagh, Cernuschi, Earl of Lauderdale, Leroy-Beaulieu, Levasseur, Earl of Liverpool, Henry Macleod, John Stuart Mill, Lord Overstone, Bonamy Price, Ricardo, Say, Thornton, Thomas Tooke, Vansittart, and Wolowski.

"Statistical works are often illustrated by graphic tables, and the Library contains a variety of charts and diagrams of considerable value.

"Year by year purchases of statistical works and other books of reference have been made for the Library. And in addition the Library has been enriched by the works purchased with the Tooke Memorial Fund, by the valuable collection of books given by the widow of the late Mr. William Newmarch, a former President of the Society, and by gifts received from Members of the Society, Authors, and Publishers.

"In the preparation of the Catalogue, the following rules have

been adopted, based upon those of the Library Association of the United Kingdom, with slight modifications:—

"With regard to the Author, works are placed—

"Under the surname of authors when stated on the title-page.

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Buenos Aires. Bulletin mensuel de Démographie de la ville de—. 3e Année. Nos. 3—6, 1884	The Statistical Bureau
Austria and Hungary—	
Oesterreichische Statistik. V Band. 2 Heft. Statistik des Sanitätswesens der im Reichsrathe vertretenen Königreiche und Länder für das Jahr 1881	The Imperial Central Statistical Commission
Budapest. Die öffentlichen Volksschulen der Hauptstadt Budapest in den schuljahren 1873-74—1880-81. 2 vols., la. 8vo. 1883-84	The Statistical Bureau of Budapest
Prague. Bulletin hebdomadaire de la ville de Prague et des communes-faubourgs. (Current numbers)	The Statistical Bureau, Prague
Belgium—	
Statistique du mouvement de l'état civil et de la population du royaume pendant l'année 1883. 4to.	The Ministry of the Interior
Ville de Bruxelles—	
Annuaire Démographique et Tableaux Statistiques des Causes de Décès. 22e Année, 1883. Diagrams, 8vo.	Dr. E. Janssens, Brussels
Bulletin Hebdomadaire de Statistique, Démographique, et Médicale. (Current numbers)	
Rapport sur les Opérations du Bureau d'Hygiène et sur la Salubrité publique de la ville de Bruxelles pendant l'année 1882. 22 pp., diagram, 8vo.	
Le Mouvement Industriel Belge. (Current weekly numbers)	The Editor
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Imperial Maritime Customs. I. Statistical Series. 4to. 1884—	Sir Robert Hart, K.C.M.G.
No. 2. Customs Gazette. No. LXI. January—March, 1884	
Nos. 3 and 4. Returns of Trade at the Treaty Ports and Trade Reports for the year 1883. $\frac{25}{19}$th issue	
Denmark. Nationalökonomisk Tidsskrift. 3, 4 Hefte. 1884. Kjöbenhavn	The Danish Political Economy Society
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Bulletin Consulaire Français. Recueil des Rapports Commerciaux addressés au Ministre des Affaires Etrangères par les Agents Diplomatiques et Consulaires de France à l'Etranger, viii^e^ vol., 7^e^ fasc. La. 8vo. 1884.....	
Ministère de l'Agriculture. Bulletin. Troisième année, Nos. 4 et 5. Plates. 1884	The Minister of Agriculture
Ministère des Finances. Bulletin de Statistique et de Législation Comparée. Juin—Août, 1884.....	M. A. De Foville
Ministère des Travaux Publics. Bulletin du—. Mai—Juillet, 1884	The Ministry of Public Works
Ville de Reims. Bulletin Mensuel du Bureau Municipal d'Hygiène. Mai—Août, 1884	The Bureau of Hygiène
L'Economiste Français. (Current weekly numbers.) Paris	The Editor
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Juillet. L'Eclairage au gaz de la ville de Paris. Le Livret de famille. Paris et Londres. La commune de Vic-de-Chassenay. Le Mouvement télégraphique en Europe. Les Salaires de la grande industrie. Variétés : Les Assurances contre l'incendie en France. La Production du sel en Allemagne. Les Exportations de sucre de Cuba. La Population du Japon	The Society
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Russia. Journal of the Ministry of Finance. (A weekly economic publication, in Russian). Nos. 9—36, fol. 1884	M. A. Vessélovsky, St. Petersburg
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JOURNAL OF THE STATISTICAL SOCIETY,

DECEMBER, 1884.

British *and* Foreign Colonies: *being the* Inaugural Address *of* Sir Rawson W. Rawson, K.C.M.G., C.B., President *of the* Statistical Society, Session 1884-85. Delivered 18*th November*, 1884.

In selecting a subject which may engage, and perhaps repay, your attention on this occasion, I have fixed upon one which, while it deals with matters of general and permanent interest, may serve to throw light upon questions that are attracting much public notice at the present time.

I propose to bring before you a brief epitome of the history of colonisation, as far as its records are required to throw light upon the creation of the several existing colonies and foreign possessions of European nations throughout the world; to trace concisely their origin; to point out some of the differences in their character; to describe their present extent, and their commercial relations with the countries of which they form a part, and to furnish a comparative view of the possessions of each country.

The subject is more than large enough for an evening's address. The facts for the greater part are not new, but they may interest you in their present garb. Probably each of my hearers may desire, and may miss, the examination of some part of my subject in which he feels a special interest, and which might be well worthy of inquiry; but I am bound by the rule of the clock, and by my desire to make my examination as complete as possible within the limits which I have prescribed to myself. I must therefore refrain from all further introductory matter, and indeed I have expunged some that I had written, in order to bring my remarks within a reasonable compass.

I do not in my historical review of the colonies deal with their extent, or the number of their inhabitants. These will be found detailed in the Appendix, Table VI. But before closing I shall compare the aggregate area and population of the colonies of each country with one another, and with their parent countries. One other preliminary remark must be added. India and all other Dependencies of the British Crown, whatever be the nature of

their connection, are styled Colonies, for the sake of brevity, and in conformity with the Official Abstracts of the Colonial Trade of the United Kingdom.

Of all the existing colonies those of Denmark date the furthest back, viz., the Faroe Islands, settled by Norwegians in 858, and Iceland, settled in 876 by the same race, flying from the usurper Harold Haarfager. Greenland was colonised by Icelanders in 986. All of these were connected with Norway up to the year 1397, when that country was annexed to Denmark. In 1814 it was transferred to Sweden, as an indemnity for Finland, but the colonies remained attached to Denmark.

The Channel Islands came into the possession of England about a century later, having been united with Normandy, when that Duchy was annexed to England at the Conquest; but they were not given up with the Duchy, and are now treated as part of the United Kingdom, although they have a separate legislature, and do not send representatives to the Imperial Parliament.

The Orkney and Shetland Islands were, like the Faroe Islands, under the rule of Norway, and governed by Norse earls until 1379, when they came into the possession of the Scotch earls of Orkney and Caithness, and were annexed to the Scottish Crown in 1471. They are represented by one member in the House of Commons.

Until the discovery of America (1492) the navigation of the European nations was chiefly confined to the shores of the Mediterranean and Black Seas, the coasts of Western Europe as far north as Britain and the Baltic, and the western coast of Africa as far south as Cape Bojador, in latitude 26° 7′ S.

It is unnecessary to do more than mention the alleged discovery and settlement of places beyond seas before the commencement of the fifteenth century. France lays claim to that of Teneriffe, and of places on the coast of Guinea, in the first half of the fourteenth century. The Netherlands advance a similar claim to the discovery of the Azores, whence those islands acquired the names of Isles Flamandes. The Canary Islands were known to the ancients, and mentioned by Pliny. They were rediscovered and settled in the first quarter of the fifteenth century by an expedition from Spain, to which Crown they have since become attached.

With these exceptions the Portuguese were the only nation of whose discoveries and acquisitions out of Europe we have records up to the close of the fifteenth century.

To the genius and enterprise of the Infante D. Henry, son of John I of Portugal, may be attributed the early and prominent part which that country took in the colonisation of the world. Out of the college founded by him for the study of astronomy and navigation issued the early navigators of Portugal, whose first

efforts were directed to the discovery of the fabulous Atlantis, reported by Pliny and Ptolemy.

Portuguese historians divide their record of colonial acquisition and dominion into three periods, of which the first extended over the first half of the fifteenth century (1415 to 1460) up to the death of D. Henry. During this period Portugal discovered, and commenced the settlement successively of, Madeira and Porto Santo, the Azores, the Cape de Verde Islands, and parts of the African coast adjoining them, and further south on the Gold Coast. Twenty years later they settled the Islands of St. Thomas and Prince, on the west coast. It was not for a century later that they acquired, and gradually extended, their settlements in Angola, stretching from the eighth, or, as they claim, from nearly the fifth degree of south latitude to the eighteenth degree at Cape Frio. All these possessions Portugal continues to hold, and with the exception of Madeira, which at the beginning of this century was taken over by England to protect it from France, they have never been held by any other country.

Madeira and the Azores have been incorporated with the kingdom of Portugal, and not treated as colonies, in the same manner as the Canary Islands with Spain, Algeria with France, and the Channel Islands with the United Kingdom.

The above brief record closes the first chapter of modern colonisation, up to the time of the almost contemporaneous discoveries of America and of the passage to India round the Cape of Good Hope, in the last decade of the fifteenth century.

These great events in the world's history opened up two vast continents and their adjacent archipelagos to the nations of Europe. Spain led the way westward, followed quickly by England. Portugal continued her course to the south and east, in which direction England did not follow for more than a century. Columbus discovered the New World in 1492; Cabot planted the English flag in Newfoundland in 1494; Vasco di Gama reached his destination, and delivered his credentials, in Calicut in 1498. Though these men were animated by a similar noble spirit of discovery, and a lofty ambition to accomplish great deeds, there was a wide difference in the character of their missions.

Columbus tempted Ferdinand and Isabella of Spain with the prospect of discovering the marvellously rich province of Chipango (Japan), and of converting the grand Khan to Christianity. It was consistent with the spirit of the times that the rulers of Spain should seek the sanction and benediction of the Pope for their enterprise. It was granted upon the same terms on which the Portuguese held their colonies along the African coast.

If it was a presumptuous act on the part of Pope Alexander VI to draw a line down the middle of the Atlantic, and to publish a Bull ordaining that all territory acquired, or to be acquired, to the eastward of it should belong to Portugal, and all acquired to the west should belong to Spain, it was certainly a provident and humane policy to attempt to direct the energies of the two nations in opposite paths; and it had the further effect of hastening the spread of Christianity and European civilisation over the face of the globe. But it must be admitted that it was an impracticable policy, which could succeed but for a short duration; and, in fact, it soon failed. A storm drove part of Cabral's fleet, bound for India about the year 1500, across the Atlantic, and Portugal became the founder, and by degrees the possessor, of its once greatest colony, now the independent Empire of Brazil, extending over the greater portion of the eastern coast of South America. In like manner Cortes sent ships eastward from Mexico to the Indian Archipelago, and in 1565 Admiral Legaspi commenced the establishment of Spanish dominion in the Philippine Islands, which Spain has retained to the present day.

Columbus depended entirely upon the Spanish Government for the equipment of his expedition. The town of Palos was ordered to find him two ships; and so great was the reluctance of the Spaniards to accompany him, that offers of pardon were made in vain to criminals under confinement to serve with him. He had the greatest difficulty in procuring crews for his vessels.

Very different were the conditions on which the Cabots started on their voyage. The charter of Henry VII, dated 5th March, 1496, empowered the Cabot family, father and three sons, to seek out, subdue, and occupy, at their own charges (be it noted), any regions which had hitherto been unknown to all Christians; to set up the royal banner, and to possess the territories discovered by them as the king's vassals. They were required to return to Bristol, and to pay the king one-fifth of their gains, a very modest amercement in those days. John and Sebastian sailed in the following year.

The object of the Portuguese in their first voyages to the East was mainly the establishment of a commercial intercourse with the rulers of those countries, though it early developed itself in that part of the world, as in America, into a spirit of conquest and the subjugation of the native races.

The return of Columbus with his glowing accounts of the splendour and wealth of the countries which he had visited, and of the boundless stores of silver and gold existing above and below ground, aroused the spirit of greed throughout the Iberian peninsula. The Cabots on their return had a very different report to make. The rugged and inhospitable shores of Newfoundland

offered no attraction either for conquest or occupation, although at a later period (1583) the island was taken possession of as a rendezvous and haven for our fleets of fishermen in those seas.

About the same time France made a small settlement on the opposite coast of this island, which she surrendered to England in 1713, and in 1604 she established fishing settlements in the Islands of St. Pierre and Miquelon, on the western shore, which were allotted to her by the Treaty of Paris in 1763, and which she retains to the present day.

Spain lost no time in despatching expeditions to secure possession of the new El Dorado. Her rapid progress and the chronicles of her blood-stained conquests are established beacons in history. Within a quarter of a century her captains had extended her dominion over all the large islands in the Gulf of Mexico, over the whole of Mexico, and the northern part of South America. Crossing the Isthmus of Darien they had become masters of the Pacific coast as far south as the borders of Patagonia, and in the northern continent they had advanced into California and Florida. At later periods Spain colonised California, and acquired Louisiana from France. In about thirty years her zeal for acquiring new territories in this direction abated. She may well have been sated with her acquisitions! Throughout this vast empire she introduced and enforced that baleful system of colonial government, based upon political exclusiveness and commercial monopoly, under which all the interests of the acquired countries were sacrificed to those of their conquerors. On the continent her territories continued to the end to be foreign possessions, not colonies. She sent governors and officials to fatten on the natives, and she supplied slaves to work the mines and the plantations; but the settlers from Spain were few, and never amalgamated with the natives.

This vicious policy, too readily followed in matters of commerce by other nations, bore its natural fruits, but not until after the lapse of nearly three centuries. All that now remains of her almost boundless territories in America are the Islands of Cuba and Porto Rico, in which, owing to the larger immigration of proprietors and officials from the mother country, a nearer approach has been made to colonisation. In the last two centuries England deprived her of Jamaica and Trinidad, France of half her possessions in Haiti (1691), and the Dominican Republic of the remainder in 1821. When Napoleon invaded Spain in the first decade of the present century her American colonies began to revolt. Chili set the example, and declared her independence in 1810. Before 1830 every Spanish province had freed itself, and adopted a republican form of government. France retook possession of Louisiana in 1802; Florida was ceded to the United States in 1820, and the

Mexican instruments of Spanish authority in California were expelled in 1836.

Thus within the same brief space of time in which Spain acquired her territories in America, she lost them all, except the two slave colonies of Cuba and Porto Rico which she now holds. The recent revolts in the former island have been put down with an enormous sacrifice of men and money. The character of the population of both (as above noticed), the abolition of the obnoxious colonial system in 1813, the great efforts made by Spain to retain Cuba, and perhaps, above all, the jealousy of any change entertained by other nations, have contributed to preserve these colonies to the Spanish Crown.

To revert to the fifteenth century, in the last quarter Sebastian Cabot made his second voyage, and reached Labrador and Hudson's Bay, named after Hudson, who reached it by land in 1610. At this period France entered upon a career of discovery in North America, and Francis I despatched thither Verrezzano, who surveyed the coast from Carolina to Newfoundland. In 1534 Jacques Cartier ascended the St. Lawrence, as far as the site of Montreal, and unsuccessful attempts were made to colonise the country. But it was not until the first decade of the seventeenth century that De Monts founded the colony of Acadia, and Champlain that of New France, both now forming parts of the Dominion of Canada. In the last quarter of the sixteenth century Sir Walter Raleigh landed in Chesapeake Bay, and attempted to form a settlement; but it was only in 1607 that this was effected, and the first British colony was established in Virginia, under a patent granted to the London Company.

In the southern continent England made no attempt at settlement. The expedition led by Cabot in 1626 to the River Plate, when he penetrated to Paraguay, was in the service of Spain; and some Protestant emigrants sent out by Coligny to Brazil in the previous century, who named their settlement Antarctic France, failed to secure a footing there. They were expelled by the Portuguese, who had learned to appreciate the value of their new possessions. The nobles of that country sought greedily for grants of land along the coast, and the people emigrated in large numbers as to a new home.

Portugal was the first European kingdom to found real colonies in America, as also to import slaves from Africa as prædial labourers, although Spain is reported to have depopulated some of the West Indian islands for the same purpose. The attention, however, of Portugal was chiefly devoted to the field which was opened to her in the East by the discovery of the passage round the Cape; and her progress was almost as rapid, and her dominions as widely extended, in Asia and Africa as were those of Spain in

America. Within the sixteenth century she acquired territory, or established peaceful relations with the native powers, throughout southern Asia, from Aden and Persia to China and Japan; on the Malabar and Coromandel coasts, in Ceylon, Siam, and the Eastern Archipelago; and in Africa she laid the foundation of her present extensive colonies of Mozambique on the east, and Angola on the west, coast.

But there was this great difference in their policy and action. While Spain aimed at territorial aggrandisement, for the purpose of draining the natives of their acquired wealth and the produce of their mines, Portugal sought chiefly to acquire and control the monopoly of the trade of the countries which she visited, or conquered. She was therefore satisfied with obtaining hold of all the main outlets of commerce on the coast, and did not seek to penetrate into the interior, or to supplant the native governments. Her trade was carried on as a monopoly by the Government alone, who appointed governors-general to regulate it. Large numbers of her population emigrated, and settled in the East; and Portugal during the sixteenth century was dominant, without a rival, in this part of the globe, and enjoyed an entire monopoly of the trade. At this time she derived a revenue of nearly 2,000,000*l.* a-year from her monopolies. In the present century, a few years before the abolition of the slave trade in 1836, she derived a revenue of 1,295,000*l.* from her colonies.

But as her chief object was trade, so with the loss of her monopoly, interrupted and eventually destroyed by the rivalry and hostility of other nations, her power, and indeed her interest, in India, melted away. The English supplanted her on the mainland; the Dutch expelled her from the archipelago; and the remnant of her vast possessions now consists of the small settlements of Goa, Bardes, Salsette, Diu, and Damao, on the Malabar coast; Macao in China, and half of the Island of Timor in the Eastern Archipelago, which she shares with Holland. Until 1622 Macao occupied the unique position of governing itself, free from control by the imperial authority. In 1845 it was declared a free port. In Africa Portugal has retained her principal provinces of Mozambique and Angola, and a portion of her former territory on the coast of Guinea; although her title to that portion of the Angola province which lies between 8° and 5° 12′ S., including the mouths of the Congo, is not generally admitted by other nations.

The first event that shook the power of Portugal in the East was its annexation to the kingdom of Spain in 1580, which involved her in all the hostilities that Philip had brought upon himself. The Dutch, who had long monopolised the carrying trade of Western Europe, distributing the produce of the East brought to Lisbon in

Portuguese vessels, found themselves shut out of this, and sought both to recoup themselves by trading direct with the producing countries, and to avenge themselves upon their tyrant by harassing and despoiling him in his outlying possessions. This led to the advance of the Dutch into the East, the formation of the Dutch East India Company in 1602, and of the settlements in the Moluccas and Java; to the expulsion of the Portuguese and Spaniards from the Spice Islands; to the establishment of the Dutch monopoly of the spice trade, and to the exclusion of all other nations from those parts.

This policy provoked constant struggles during two centuries, ending in a treaty of peace with England in 1824, by which Holland finally abandoned her monopoly of trade, but obtained the recognition of all her possessions in the Indian Archipelago, with full liberty to extend them in those seas, reaching, as she claims, from the north-west point of Achin, in long. 95° E., to New Guinea in long. 141° E., and from the Island of Palawan, in lat. 8° 30′ N., to the parallel of 12° S.

Of this liberty she has availed herself to the fullest extent. Between 1824 and 1882 she had entered into 385 treaties with native chiefs within this area.* She has extended her authority throughout almost the whole of Java. From comparatively small holdings in the vast islands of Borneo, Sumatra, and Celebes she has obtained the submission of the native chiefs throughout the whole or the greater part of them. In the years 1828 and 1848 she assumed a nominal possession of half of New Guinea, from the west coast to 141° E., without occupying any part of it, and she now possesses a colonial empire in Asia inferior only to that of England.

Her successes in the East led her to seek for similar acquisitions in the West. A West India Company was formed, which during the first half of the seventeenth century acquired possession of the province of Pernambuco, and of a long range of coast on the north of Brazil. The company was however driven out by the Brazilians in 1654, and Holland sold her rights in Brazil to Portugal in 1661 for 6 million florins. During this period (in 1634) the Dutch took from Spain the Island of Curaçao and its dependencies, Bonaire and Aruba, which they now hold; and in 1666 they became masters of Surinam, or Dutch Guiana.

In the first decade of the seventeenth century England took possession of the Bermudas, or Somers' Islands, in the North Atlantic, where she has since erected an important naval station. She also founded the colony of Barbados, which, alone among the West Indian Islands, has never been severed from her rule. A few years later English and French adventurers almost at the

* *Vide* Parliamentary Paper, 1882, C-3109.

same time settled in the Island of St. Kitts, where they expelled the Carib natives, and successfully resisted the attempts of the Spaniards to displace them.

From this island and from the mother countries settlers of both nations spread rapidly over the Lesser Antilles, of which Spain vainly claimed the sovereignty, without having occupied them. The value of these islands for the growth of sugar, coffee, and other colonial produce was soon appreciated. The Leeward Islands were settled chiefly by the English in 1623-32, but among them Martinique, and Guadeloupe with its dependencies, were settled by the French in 1635-50. The Windward Islands were not settled until later. In 1748 St. Vincent, Tobago, and St. Lucia were declared neutral. In 1763 the two former, with Grenada, were ceded to England, and St. Lucia in 1803.

Most of these islands, as well as the Bahamas and Turks Islands, which were first settled by England about the same time (1629-50), had long been the resort of buccaneers and desperate adventurers of all nations. They were peopled chiefly under charters from the Crown, or by companies formed in England and France. They long went under the name of the Plantations. About the same time Holland obtained possession of some of the smaller Leeward Islands, of which she retains St. Eustatius, Saba, and the southern side of St. Martin, the other part being held by the French. Cayenne, or French Guiana, on the mainland of South America, was settled by the French in 1626-35.

Was it the accident of Cabot's voyages, or the bright star of England, or the temperament of the English race, which led the latter to expand and seek a new home on the northern, rather than the southern, continent of America? The consequences have been momentous in the history of the world. Following close in the wake of Raleigh, a large influx of emigrants from England, Puritans, Quakers, Catholics and Royalists, spread themselves along the shores of the northern continent, seeking refuge from the religious persecutions and political turmoil of that period; settling, some with Royal charters, others in bodies independent of the Crown. These were colonists in a true sense, emigrating with their families, abandoning their fatherland without any intention of returning, and taking root in their new home. About the same time France colonised Canada in a similar manner, and the Netherlands established colonies among those of England, under the name of New Netherlands, and New Amsterdam, now New York. The Swedes also founded settlements on the River Delaware, and in New Jersey. Rivalries and jealousies soon sprang up. The wars of European nations involved their dependencies in their own fortunes, and the English proving themselves the strongest, the

Dutch and Swedes, as well as the Spaniards, the prior occupants of parts of the Southern States, were driven out; and England, before the close of the seventeenth century, became the mistress of the whole borderland from the mouth of the St. Lawrence, where a body of Scotchmen, under Sir W. Alexander, founded the British colony of Nova Scotia (now a province of the Dominion of Canada), to the borders of Florida.

During the sixteenth century France was too much occupied with intestine and foreign wars to aim at the acquisition of foreign possessions; but in the first half of the seventeenth century she turned her attention in the direction both of North America and Asia. It was at this time that she succeeded in colonising parts of Nova Scotia and Canada, explored and obtained some footing in Louisiana, and attempted, but in vain, to establish herself in Florida. This would scarcely justify Paul Gaffarel, the recent chronicler of the present French colonies, in asserting that "the French became "masters of all North America, except the coast of the Atlantic, "up to the Alleghanies, from Florida to Cape St. John," or in claiming that "France in less than a century had explored, "cleared, peopled and civilised this vast extent of territory."* Certain it is that she left few traces of her work or her power south of Canada. As England possessed the coast, she could not submit to be hemmed in on it, and excluded from the interior. Hence a continual struggle between the colonists of the two countries, until, in 1759, England succeeded in wresting Canada from France, and constituting it a British colony, and New England became free to spread out westward. About the same time France ceded Louisiana to Spain, and Spain ceded Florida to England. This is not the place for narrating how, and by what fatuity, in the last quarter of the eighteenth century, England alienated and lost for ever this her vigorous and thriving first-born offspring.

She however retained Canada, which then extended little beyond the lower province, whose inhabitants, being of French origin, had little sympathy with the revolt in the New England States. The upper province was chiefly settled by the United Empire loyalists and settlers from Great Britain, and the united province has since extended itself, until, united with the Colonies of Columbia and Vancouver's Island, and with all the adjoining provinces of British North America, it extends across the continent from sea to sea, and constitutes the magnificent and flourishing Dominion of Canada.

The success of the Dutch in the East, and a sense of their own increasing naval power, led the English in the same direction. The charter of the East India Company, founded expressly to

* "Les Colonies Françaises," by Paul Gaffarel, 1880, p. 13.

break down the monopoly of the Dutch, was granted on the last day of the sixteenth century. Failing to get the better of the Dutch in the islands, they made their first settlement on the mainland, in the Madras Presidency, in 1620. The French soon followed. Successive companies were formed in France, but they accomplished nothing, and the first settlement was made at Surat in 1662. Two years later, in 1664, the French East India Company was incorporated. Bombay was ceded to Charles II in 1661, as part of the dowry of his queen; Fort William, now Calcutta, was founded in 1686.

The growth of British territory arose mainly from the antagonism of the French. For more than a century the two nations strove together, and with the Dutch, for the mastery of the coast. The Portuguese had already retired from the contest, retaining only their small possessions on the Malabar coast. Dupleix, the French Governor-General in 1741-54, has the credit of having first devised the plan of governing the natives through their own princes. Paul Gaffarel writes that, in the five years 1749-54, "Dupleix imposed the authority of France on a third of "the area, and more than a third of the population, of Hindostan."* Suffice it to say that in the last named year Dupleix became the victim of the rancour of his enemies and the jealousy of his Government, and was recalled. In the space of seven years the English retook Pondichery, and recovered their supremacy in India, which they have since retained. The present possessions of France consist of a few small settlements with very limited precincts, viz., Chandernagore, Pondichery, finally restored in 1814, Mahé and Karikal, Masulipatam and Yanaon, and some small factories (*loges*) with fields adjoining, at Calicut, Surat, and other places.

England has continued to extend her sway in India until it is acknowledged by a population of 250 millions, including the feudatory States, with an area of 1,413,000 square miles, over the greater part of which the Queen of England in 1877 assumed the title, as she had previously exercised the authority, of Empress of India.

From Baluchistan to the River Irrawaddy, and from the Hindu Kush to Cape Comorin no native power declares itself independent, and no European power exercises dominion, except France and Portugal in the small settlements already described.

The settlements of England on the West Coast of Africa date back to the early part of the seventeenth century, when the fabulous reports of the wealth and importance of Timbuktu as a commercial centre led both England and France to make endeavours to reach it from the west coast: the former by the

* P. 254.

River Gambia, the latter by the River Senegal. Both attempts failed. Gambia was retained, and other settlements on the Gold Coast were made in the seventeenth century, for the purposes of commerce and of carrying on the slave trade. Sierra Leone was founded a century later (1787), as an asylum for American refugee Negroes from Nova Scotia, for Maroons expelled from Jamaica, and liberated Negroes captured in transit by H.M. cruisers, and also as a centre for striking a blow at the slave trade. British authority was, in 1861, extended upon the Gold Coast to Lagos for the latter purpose.

The French colony of Senegal, founded about the same time as the Gambia, and with the same object, has grown into a large territory, extending nominally from Cape Blanco to within a short distance from Sierra Leone, about 1,000 miles, with small areas within it occupied by England and Portugal.

During the seventeenth and eighteenth centuries the wars occurring between the several nations of Europe, arising out of matters unconnected with the colonies, led to many changes in the supremacy of the different countries in their foreign possessions. At that period the dominion of the seas was vigorously contested between England and France, and the varied fortune of each country led to the dismemberment of its outlying possessions. In those days the penalty of defeat was a loss of territory, generally of colonial possessions. These were taken in compensation for wars forced upon a nation, or out of which a nation issued victorious. Now-a-days national honour often finds a more convenient compensation in crushing fines, imposed without reference to the origin of the quarrel.

In 1655 England avenged herself for the invasion of the Spanish Armada by the capture and retention of Jamaica. In 1704 she became mistress of Gibraltar, which she holds as the key of the Mediterranean, and as the warden of her commerce within its waters; and in 1797 she wrested Trinidad in the West Indies from Spain. Each of these annexations occurred after a war with that Power arising out of European politics.

During the eighteenth century the West Indies became, as it were, shuttlecocks bandied to and fro between England and France, in their struggles for naval supremacy. Looking to the successive Treaties of Utrecht (1713), Aix-la-Chapelle (1748), Paris (1763), Versailles (1783), Amiens (1802), and Paris (1814), we find that these islands, or some of them, were transferred backward and forward on each occasion, to say nothing of the intermediate changes by force of conquest; and it would almost seem as if the conclusion of a treaty of peace was the signal for attempts to recover the losses just assented to.

Since the last cited treaty no changes have been made. The Windward Islands belong to England. Among the Leeward Islands Martinique, Guadeloupe, and their dependencies, belong to France; St. Eustatius and Saba to Holland; St. Martin is divided between France and Holland; and the Virgin Islands belong to Denmark, with the exception of Tortola, which was settled by the English in 1666.

On the road to India the small island of St. Helena was occupied by England on its abandonment by the Dutch in 1651, and used as a rendezvous and victualling station for passing ships; and the island of Ascension, to the north of it, was taken possession of in 1815 as a naval station during the confinement of Napoleon at St. Helena, and has since been retained for the use of British cruisers on the West Coast of Africa.

While France was pressing her conquests in India she took possession of the Mascarenhas Islands, of which England deprived her in 1810; but Bourbon, now called Réunion, was restored at the Peace in 1814, and the Isle of France, now Mauritius, was retained, on account of its good harbour, lying in the track of our ships bound to India. The Seychelles Islands and other small insular dependencies in the Indian Ocean have since been annexed to the latter.

Colbert contemplated and attempted the colonisation of Madagascar by a company in 1664, but it failed, and a century elapsed before the French repeated the attempt, when, in 1750, they obtained the cession of the island of Ste. Marie on the eastern coast, which however they did not occupy until 1843. In the latter year they obtained cession of the island of Nossi Bé on the west coast, and of Mayotte, one of the Comoro Islands, to the north-west. The possession of these small islands, and Colbert's action in the seventeenth century, have furnished pretexts for frequent interference by France in the affairs of Madagascar, and for the recent aggressions which have been made upon the existing Hova Government.

In the years 1668-90 the Spaniards took possession of the Ladrone, or Marianne, Islands, the Caroline and Pellew Islands, three groups of numerous, but small, islands which lie in close proximity to their possessions in the Philippine Islands, and which doubtless proved troublesome neighbours under independent and subdivided native governments.

In 1778 Portugal ceded to Spain the island of Fernando Po, on the West Coast of Africa, which she continues to hold, with a strip of land, called St. Juan, on the mainland, and the insignificant islands of Corisco and Elobey on the coast, and of Annobon at some distance from it.

In 1783-86 England secured protection for its mahogany cutters

in the Spanish province of Honduras by taking possession of part of it, and creating it into a British colony.

About the same time England dispossessed the Dutch on the coast of Malacca, founding what are now called the Straits Settlements, where some years later (in 1819) she established the seat of government for this part of her territories at Singapore, the extremity of the peninsula, and the turning point of the great stream of commerce from Europe and India to the Eastern Archipelago and China.

In the last few years of the eighteenth century the genius and energy of Cook opened up to England the vast island, or rather continent, of New Holland. From its original destination as a penal settlement, Australia has grown up with a rapidity and solidity which has totally obliterated the dark traces of its origin. It is impossible here to do more than note that, as the freedmen and new settlers increased, they spread themselves rapidly along the coast, and inland; that within twenty years Tasmania had been occupied; that in 1836 Port Philip, the site of the future capital of Victoria (separated from New South Wales in 1851), had been founded; that within another thirty years Southern and Western Australia had been erected into separate governments; and that in 1859 Queensland was separated from New South Wales. The introduction of cattle and sheep on the vast inland pastures, and the discovery of gold in 1851, have contributed largely to the rapid progress of these colonies, and of New Zealand, which was first settled in 1841; but the energy and enterprise of their inhabitants, the liberal character of their institutions, their loyalty and the closeness of their connection with the parent country, are elements which have united to raise them to their present high standard of social and commercial prosperity.

The subjugation of Holland and Belgium by France in 1795 led to a great increase of the British colonial possessions, as England, in her contest with the French, found a readier submission on the part of their Dutch annexations than she might otherwise have obtained. In the East, Malacca, Cochin, Ceylon, and the Cape of Good Hope succumbed to the British arms, and in the West, Guiana, now known as British Guiana, or Demerara. All of these have been retained, Ceylon and the Cape Colony as completing, with Mauritius, a chain of settlements affording shelter and security to our Indian commerce rounding the Cape of Good Hope; the latter as forming a valuable addition to our sugar-growing colonies in America.

It may here be remarked that the two territories in which Holland succeeded in establishing true colonies, viz., in North America and the Cape of Good Hope, and the two principal terri-

tories in which France did the same, Canada and Mauritius, have fallen into the hands of England. In Canada, Mauritius, and the Cape the population maintain, to a great extent, their national character and language in those parts which they continue to occupy; but in the United States they were either driven out, or have been absorbed in the general population.

In 1798 Malta, long held by the Knights of St. John, capitulated to France, when Napoleon conceived the idea of seizing Egypt, and obtaining command of the trade with India. Two years later (1800) England captured the island, and has since held it as a naval and military station, indispensable to her overland trade to India. With the same object she has lately obtained from Turkey the protectorate over Cyprus.

Heligoland is a small island, which England took from the Danes in 1807, and retained after the bombardment of Copenhagen, and the dissolution of the northern Confederation formed against her. It commands the mouths of the Elbe and Weser, and is valuable as a strategic point. The small settlements which Denmark possessed on the Indian coast were sold to England in 1843.

In 1833 England annexed and settled the Falkland Islands, as a station for her whale fisheries in the southern seas. Spain, France, and Buenos Ayres had at different times claimed a right to them, but had made no serious attempt to occupy them.

Before the discovery of the Cape route to India, Aden, on the Arabian coast, had been a place of some importance, and when the overland route to India was opened, the East India Company, having occasion to punish the natives who had plundered an English vessel wrecked in the neighbourhood, annexed the post, which has since become a place of great importance to her trade, and to that of the world passing through the Suez Canal. The annexation of Hong Kong in 1841 was part of the compensation imposed by England on China for the losses caused by the war forced upon her in 1839. Labuan, having been settled in 1846 by Sir J. Brooke, was ceded to Great Britain by the Sultan of Borneo in that year and occupied in 1848. Sir James afterwards became Rajah of Sarawak on the mainland, but England has not annexed the territory. In 1855 England annexed Perim, a small island at the entrance of the Red Sea, for the purpose of preventing any possibly hostile country from obtaining possession of a post whence they might seriously interrupt her trade to the East.

France, having lost so many of her colonial possessions during the wars of the Revolution and the Empire, began, after a few years of peace, to desire to resume her position as the mistress of a great colonial empire; and at the accession of Louis Philippe in 1830 an opportunity occurred of acquiring by force of arms the

extensive and valuable province of Algeria, which, after protracted struggles, she has successfully colonised and attached to the Republic.

Pursuing the same policy, she took possession in 1843 of the Marquesas Islands in Polynesia, and of the islands of Nossi-Bé and Mayotte, off the coast of Madagascar. She also made a settlement on the Island Ste. Marie, also on that coast, originally ceded in 1750. She gained a footing on the Gold Coast at Grand Bassam, Assinie, and at the mouth of the River Gaboon; and she established a protectorate in Tahiti. None of these acquisitions could be accounted of much value as colonies, nor have they been utilised. Those on the Gold Coast were soon abandoned, and have only lately been resumed.

Under the Second Empire the same policy was continued. In 1853, after the development of the English colonies in Australia and the discovery of gold in Victoria, France took possession of the Island of New Caledonia, eastward of Australia, which had not presented sufficient attraction to induce the English Government, or the Australian colonies, to annex it. She has established there a large penal settlement, for which she had been seeking a suitable site, preferable to that of Cayenne, and providing a place of exile for the political convicts of that period. A few years later, in 1864, she annexed the Loyalty Islands, a small group to the east of New Caledonia. About the same time she extended her territories in Algeria and Senegal.

In 1862, after a petty war with the king of Annam, with whom she had had relations since 1779, France annexed a large portion of his territory under the name of Cochin China, which she augmented by three provinces in 1867. In 1863 she established a protectorate over the adjoining kingdom of Cambodia. About the same time she bought Obokh, with three or four miles of coast and a good anchorage, on the African coast, near the entrance of the Red Sea; and in 1877 she bought the Island of St. Bartholomew (or Barthélemy) in the West Indies, which she had ceded to the Swedes in 1784.

In 1880, upon the abdication of the king of Tahiti, France definitely took possession of that island, which had been under her protectorate since 1842, and in the following year annexed the islands dependent on it. In 1874 England annexed the Fiji Islands, in Polynesia, for the purpose of protecting the natives, and repressing abuses in the engagement of labourers to be employed on the plantations in Australia. In 1881 France, after an imbroglio with the Bey of Tunis, and several months' fighting with the native Arab tribes, established a protectorate over the Regency, which has reduced it to a complete dependency of the Republic.

There are a few small territories held by different countries

throughout the world, which it would be difficult to ascertain, and which, as having no system of local government, cannot be recognised as Colonies, and do not therefore come within the scope of this inquiry; but some of these have lately attracted much public attention, and may deserve notice. Such are the small territory of Victoria, on the Benin coast, lately annexed by England; that of Obokh, on the Somali coast, just outside the entrance of the Red Sea, purchased by France in 1862; that of Assab, on the same coast, just within the Red Sea, annexed by Italy in 1881; and the several detached ports on the Gold Coast, and around the mouth of the River Cameroons, and of Angra Pequena, which Germany has annexed, or taken under her Protectorate, within the last few months.

This review of Colonial Possessions would scarcely be complete without some reference to a subject which is engaging much attention at the present time, viz., German colonisation. Germany does not possess any colonial territory. Her recent action in annexing, or extending her protection over, certain scattered settlements on the West Coast of Africa has provoked much discussion. But the public is not generally aware that Germany has long been in one sense a great colonising Power; that emigrants from the Palatinates were among the earliest settlers in the United States; that since the year 1820 she has sent forth more than three millions and a half of her people to the United States alone, being two-thirds of the number from the United Kingdom during the same period; that in the last three years, 1881-83, their number was 655,800, an average of 218,600 a year, exceeding the emigration from the United Kingdom in the same years by nearly one-third; and that the number of German emigrants and their families residing in foreign countries, including those adjoining the Fatherland, viz., Hungary, Galicia, and Russia, amounts at the present time to at least $10\frac{1}{2}$ millions, including $4\frac{1}{2}$ millions enumerated in the last census of the United States, who had either a German father or a German mother.* It should therefore scarcely be a matter for surprise, or exception, if Germany should desire to possess colonial territory, to which her emigrant population may resort, retaining them under her authority, and profiting by their industry and commerce, and by the extension of the national dominion, instead of witnessing their continual absorption in the territory of other countries, with which possibly she may have no sympathies. It must also be borne in mind that Germany has acquired a fresh interest in the advancement of her mercantile marine since the

* Mr. Ravenstein has since satisfied me that the table at p. 603, on which this latter statement is founded, is both incorrect and incomplete, and that the numbers are understated. There is not time to compile a more accurate one.

consolidation of the empire; and that the necessities of her present political condition oblige her to maintain a powerful naval force, which is available for the protection of any newly acquired colonial territory, and will find a suitable employment in times of peace in visiting and extending them.

For the elucidation of these statements I have added two tables in the Appendix, VII and VIII. The latter exhibits the extraordinary difference between Germany and France in the matter of colonisation. The number of persons who emigrated from France to the United States since 1820 was only 334,563, or less than the number of Germans emigrating to the States during the last two years. The argument of the French writers who advocate extensive colonisation is, not that an opening is required for a superabundant population, or for the employment of her national shipping, but that France was great when she had extensive colonies; they deplore her present decline, and maintain that she will recover her former greatness when she again becomes an important colonial power. Professor Paul Gaffarel writes: "The balance of "population among the nations of Europe was destroyed, to the "detriment of France, from the day that she ceased to colonise. If "we do not exert ourselves to re-establish the balance of Europe, "we cease to belong to the first rank of nations. There is but one "way of re-establishing this balance, colonise once more." * "Il "faut coloniser, coloniser à tout prix." * But there is a converse to this argument. It may be that France had colonies because she was great, and not that she was great because she had colonies.

Moreover M. Gaffarel himself supplies a valid reason why France is not in a condition to colonise at the present time. He says: "If we "do not continue to colonise, it is because the ill understood notion "of the family interests prevails universally, and prevents colonisa-"tion. It is unhappily only too true that our families do not increase, "and that we cannot send our children out of France, because they "are scarcely numerous enough to continue and perpetuate the "family. It appears that France for some years past has sought "to put in practice the dismal and depressing theories of Malthus. "Is it necessary to cite the well known instance of the Department "of Calvados," (he might have cited many others,) "in which the "population decreases annually in inverse ratio to the increasing "wealth of the district? Have we not heard of the peasants in this "department lamenting as a misfortune the birth of a child, "because he must share in the heritage, and diminish the property? "'Sparta perished for the want of men,' wrote Polybius: let us "take care that France in a few generations hence does not likewise "perish for want of men." * So writes this typical advocate of

* Pp. 552, 553, and 550.

French colonisation, and does not see that to send away the armies of France to acquire distant territories, in conflict with malarious climates and hostile races, must have the effect of further reducing the power of France to colonise, when the opportunity may be "à "tout prix" acquired. It is not in the colonies that men are required, but in France, as the records of her last census and the melancholy disclosures of her writers in the public press continually testify.

In thus freely expressing the views which, upon cosmopolitan grounds, I cannot but take of M. Gaffarel's arguments in favour of French colonisation, I cannot refrain from adding my regret, in the interests of France herself, at the existence of circumstances, and the advocacy of a policy, of so injurious a character.

The following summary affords a good view of the possessions of each country in the several quarters of the globe, and of the mode of their acquisition. It exhibits in a striking manner the extent to which England has created her possessions by colonisation and settlement, and now occupies the greater part of the once available territory suitable to the habitation of Europeans. It is difficult to draw a line between settlement and conquest at distant dates, but I have applied the same rule to the colonies of all the countries, and therefore for purposes of comparison the summary will stand good. It further shows how small is the colonial territory retained by England out of its extensive conquests over other European Powers, compared with the thousands of millions sterling spent, and the hundreds of thousands of British lives sacrificed, in the European wars which almost exclusively led to those conquests, and in the maintenance of that maritime supremacy, by which her colonial power has been created, and upheld against the most powerful combinations of her European opponents.

ENGLAND. **By Colonisation and Settlement:**

In America—Canada, Dominion of, excepting Provinces of Quebec, Nova Scotia, New Brunswick, and Prince Edward's Island; Newfoundland; Barbados; St. Kitts and Leeward Islands, excepting Dominica; Bermudas, Bahamas and Turks Islands, Falkland Islands.
Area, 3,204,304 sq. m.; Population, 2,601,345.

In Africa— Gambia, Sierra Leone, Gold Coast, Lagos, Ascension Island, Natal.
Area, 273644 sq. m.; Population, 966,485.

In Asia— Australasia, Perim.
Area, 3,117,972 sq. m.; Population, 2,742,699.

Total by Colonisation and Settlement:
Area, 6,429,920 sq. m.; Population, 6,310,229.

By Conquest and Cession from Native Powers:

In Asia and Polynesia— Indian Empire and Straits Settlements; Aden, Hong Kong, Labuan; Fiji Islands and Rotumah.
Area, 913 401 sq. m.; Population, 199 542,150.

ENGLAND—*Contd.* **By Conquest from European Powers:**

From Spain— Jamaica, Gibraltar, Honduras, Trinidad.
Area, 13,511 sq. m.; Population, 779,765.

From Holland—St. Helena, Ceylon, British Guiana, Cape of Good Hope.
Area, 340,857 sq. m.; Population, 4,291,053.

From France— Provinces of Quebec, Nova Scotia, New Brunswick, and Prince Edward's Island; Windward Islands, viz., St. Vincent, St. Lucia, Grenada, and Tobago; Dominica, Malta, Mauritius.
Area, 240,651 sq. m.; Population, 2,924,642.

From Denmark—Heligoland.
Area, one-third sq. m.; Population, 2 001.

Total by Conquest from Foreign Powers:
Area, 595,019 sq. m.; Population, 7,977,461.

PORTUGAL. **By Settlement:**

All its Colonies in Africa, and Islands on the Coast of Africa.
Area, 698,618 sq. m.; Population, 2,874,414.

By Conquest and Cession from Native Powers:

All its present small possessions in India.
Area, 7,160 sq. m.; Population, 849,553.

SPAIN. **By Settlement:**

Canary Islands, Cuba, and Porto Rico.
Area, 49,578 sq. m.; Population, 2,534,306.

By Conquest and Cession from the Natives:

Philippine, Ladrone, Caroline, and Pellew Islands.
Area, 115,306 sq. m.; Population, 5,603,685.

HOLLAND. **By Settlement:**

Surinam, St. Eustatius, St. Martin, and Saba, in the West Indies.
Area, 46,029 sq. m.; Population, 61,682.

By Conquest from Spain and Portugal, or Conquest and Cession from Native Powers:

All its possessions in the Eastern Seas.
Area, 636,329 sq. m.; Population, 26,743,678.

By Conquest from European Powers:

From Spain—Curaçao and its dependencies.
Area, 374 sq. m.; Population, 36,237.

FRANCE. **By Settlement:**

In America—Islands St. Pierre and Miquelon, Martinique, Guadeloupe and its dependencies, French Guiana.
In Africa— Senegal, Réunion.

Total by Settlement:
Area, 145,091 sq. m.; Population, 764,213.

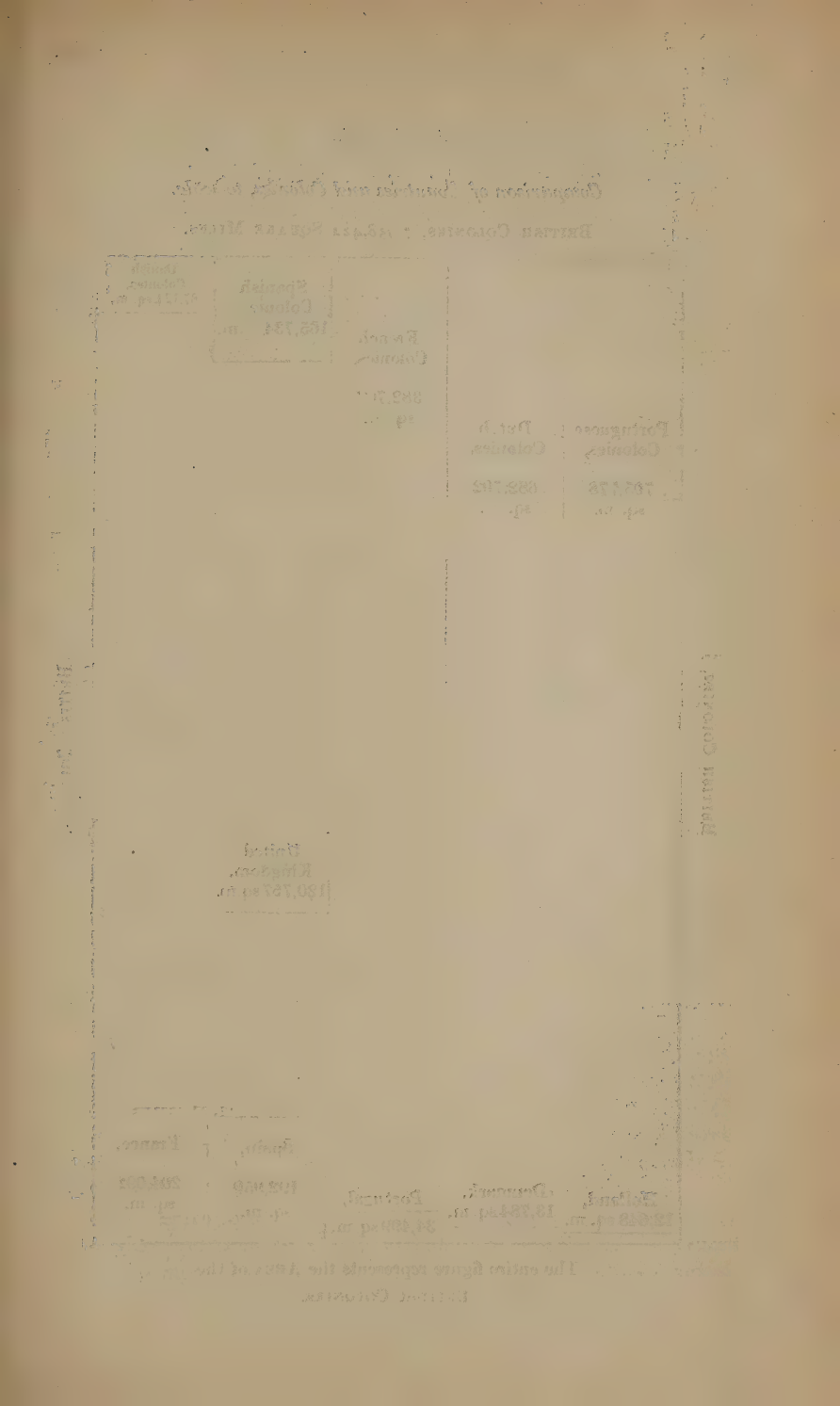
By Conquest or Cession from Native Powers:

In Africa— Algeria, Tunis (protectorate), Gaboon, Gold Coast, Islands St. Marie, Nossi-Bé, and Mayotte.
In Asia— Its small possessions in Bengal, Cochin-China, Cambodia (protectorate).
In Australasia and Polynesia— New Caledonia, I. of Pines, Loyalty Is., Marquesas Is., Tahiti and its dependencies.

Total by Conquest and Cession from Native Powers:
Area, 237,660 sq. m.; Population, 7,956,644.

DENMARK. **By Settlement:**

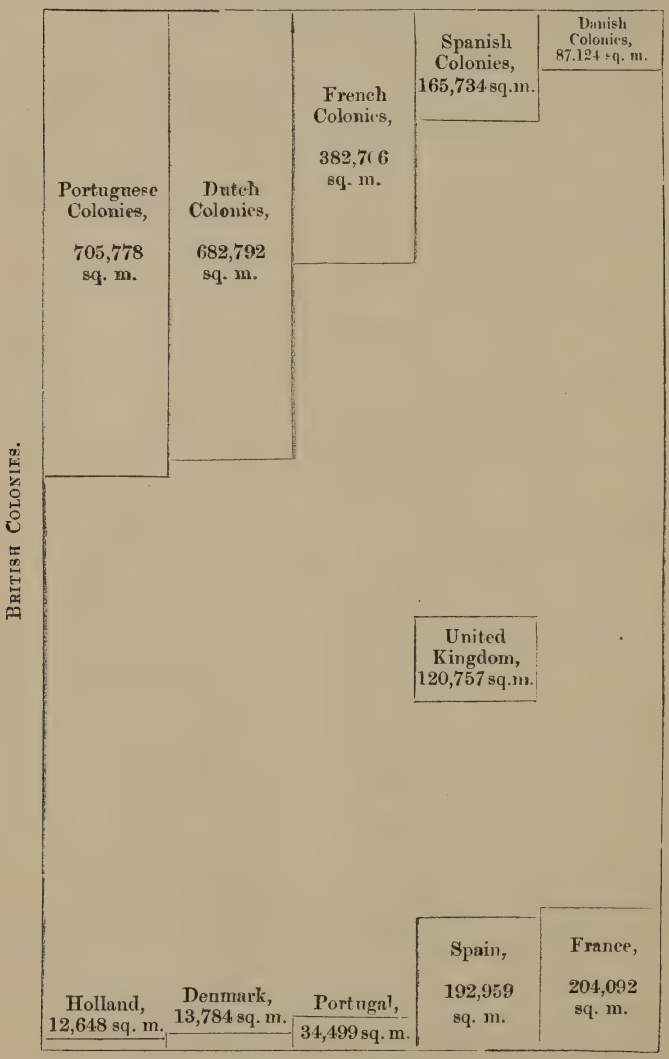
All its possessions.
Area, 87,124 sq. m.; Population, 127,122.



A.—AREA.

Comparison of Countries and Colonies, to scale.

BRITISH COLONIES, 7,938,422 SQUARE MILES.


Spanish Colonies, 165,734 sq.m.
Danish Colonies, 87,124 sq. m.
French Colonies, 382,706 sq. m.
Portuguese Colonies, 705,778 sq. m.
Dutch Colonies, 682,792 sq. m.
BRITISH COLONIES.
BRITISH COLONIES.
United Kingdom, 120,757 sq.m.
Spain, 192,959 sq. m.
France, 204,092 sq. m.
Holland, 12,648 sq. m.
Denmark, 13,784 sq. m.
Portugal, 34,499 sq. m.

The entire figure represents the AREA of the BRITISH COLONIES.

Having traced the outline of the creation of the Colonies as they at present exist throughout the world, I must gather up my separate threads, and furnish a descriptive and graphic account of the extent and value of those belonging to each country, as illustrated by their area, population, and commerce.

Table II contains an abstract of the Area and Population of the colonies of the several countries in each quarter of the globe. The details for each colony, with the dates of their acquisition, are given in Table VI. Diagrams A* and B† exhibit these graphically.

> Segnius irritant animos demissa per aurem
> Quam quæ sunt oculis subjecta fidelibus.

It is probable that few of my hearers, or of the public, have formed, or could without a diagram form, an idea of the relative extent of the area and population of the British colonies, as compared with those of other countries, and with the countries themselves.

Diagram A* shows that the Area of the British colonies is nearly 8 millions of square miles (7,938,422) and that it is more than three times as large as the combined area of the colonies of all other countries, of the mother countries of these latter, and of the United Kingdom added, amounting as a total only to 2½ millions of square miles (2,602,873), or rather less than one-third (32·8) of the total area of the colonies of the British Empire. The area of our colonies is rather less than the area of the Russian Empire, including Siberia and Central Asia, which is 8,387,800 square miles; but if the area of the native feudatory States in India, amounting to 509,284 square miles, be added, over which England exercises as great a control as Russia does over much of the territory under its sway, together with that of the United Kingdom itself (120,757), then the area of the British Empire will exceed that of the Russian Empire by about 200,000 square miles, and it covers (within a fraction) one-sixth (16·3 per cent.) of the whole land area of the globe, as estimated by Behm and Wagner in Petermann's "Mitteilungen."

There is moreover this marked difference between the colonies of England and those of other countries, that while the whole of the Portuguese, Spanish, and Dutch colonies, and almost all the French, are within the tropics in Africa, Asia, and Central America, three-fourths of the British are within the temperate zones, chiefly in North America and Australasia.

With regard to Population, similar comparisons, drawn from the same tables and Diagram B†, show that the population of the British colonies is more than four times that of all foreign colonies (the pro-

* P. 568. † P. 571.

portion of these latter to the former being 22·2 per cent.), and nearly double that of those colonies added to the countries to which they belong (the proportion of these latter being 52 per cent.). The proportion would be very largely increased if the population of the feudatory States in India, 55 millions, were added, the respective proportions of the foreign States being thereby reduced to 17·7 and 41·6 per cent. Compared with the estimated population of the world, the British colonies alone amount to more than a seventh (14·6 per cent.); and the British Empire, including the United Kingdom and the feudatory States in India, amounts to more than one-fifth (20·9 per cent.), or slightly less than that of the whole of Europe.

There is a difference as marked in the character of the population as in that of the area of the British colonies. Almost the whole of the subjects of Portugal, Spain and Holland, in Africa and Asia, consist of the comparatively uncivilised natives of the countries, with a mere handful of Europeans or other civilised inhabitants. The proportion indeed of French and other civilised inhabitants in the French colonies, though greater, is still comparatively small. But almost the whole of the inhabitants in the chief American and Australian colonies of England are civilised, and the greater part are of British origin; while in Asia, the condition of the population, both in British territory and in the Indian Native States attached to it, places them beyond all comparison above the Negro, Malay, and other Oriental subjects of the other countries. The same may be said of the greater part of British South Africa.

The differences between the area and population of the several Mother countries and their colonies are very striking. The fact of the smallest countries possessing the greatest extent of colonies more especially cannot fail to attract notice.

With regard to area :—

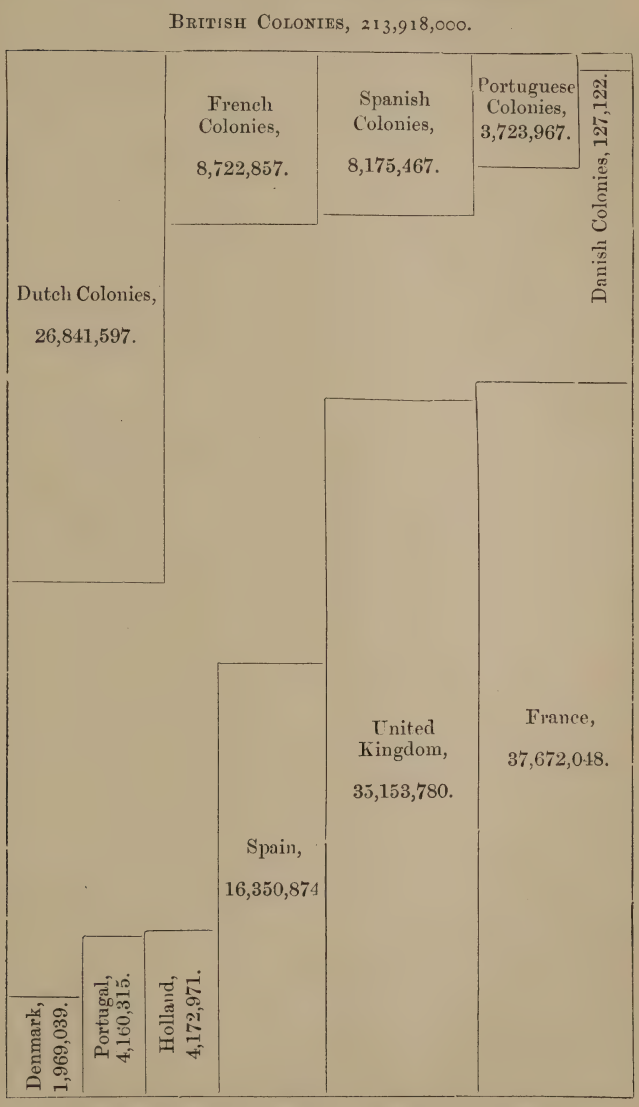
England has	66·00	sq. miles to 1 sq. m. of her own area :
Holland „	54·00	„
Portugal „	20·00	„
Denmark „	6·30	„
France „	1·90	„
Spain „	0·86	„

With regard to population :—

England has about	6	colonists to	1	metropolitan.
Holland	6	„	1	„
France, without Protectorates	1	„	6	„
Ditto, with „	1	„	4	„
Portugal	1	„	1	„
Spain	1	„	2	„
Denmark	1	„	15	„

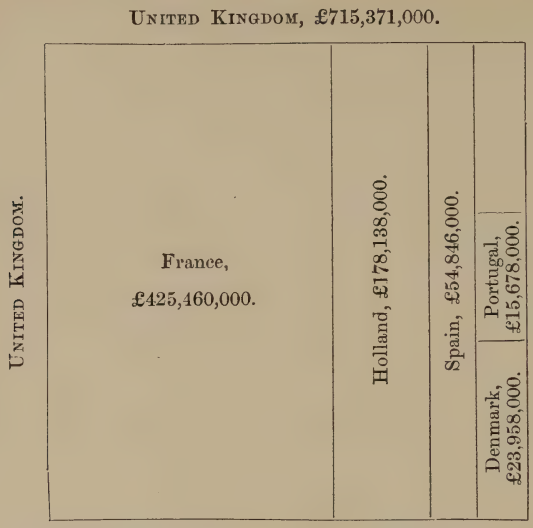
B.—POPULATION.

Comparism of Countries and Colonies, to scale.



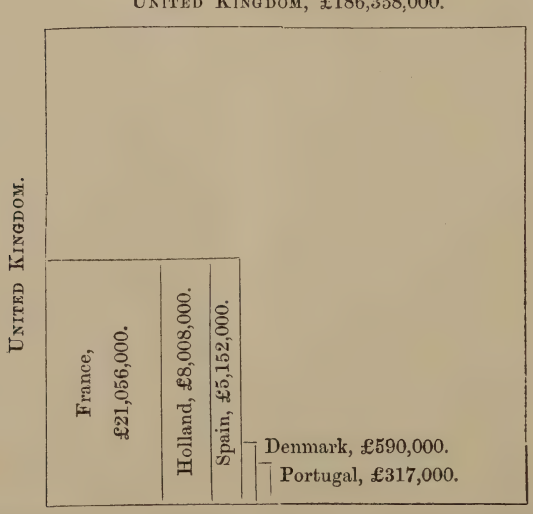
The entire figure represents the POPULATION of the BRITISH COLONIES.

C.—GENERAL TRADE, IMPORTS AND EXPORTS.



The entire figure represents the Total General Trade of the UNITED KINGDOM.

D.—TRADE OF EACH COUNTRY WITH ITS COLONIES.



The entire figure represents the Trade of the UNITED KINGDOM with its COLONIES.

The only other element of national power with which I have time to deal on this occasion is the Trade of the different countries and their colonies. We possess full returns of the trade of the several colonies of England and France, and partial returns for those of Holland, but none for those of Portugal, Spain, or Denmark. It is not therefore possible to compare together the trade of the colonies of each country. We possess, however, in the Trade returns of the Mother countries, materials for a most interesting comparison, exhibiting results of no small importance in relation to the question of the value of the British colonies to the Empire.

In Tables III and IV are comparative statements of the value of the total Trade, Import and Export, of all the countries possessing colonies, and separately of their trade with their own colonies. The tables show also, in averages of three years, to what extent those trades have increased, or decreased, within the last ten years. The comparisons have been brought up to the latest period for which returns are available.

The chief results, as shown in the tables and in Diagrams C and D,* are as follows :—

1. The total annual Trade (imports and exports taken together) of the several countries, on the average of the last three years, has been :—

	£	£
For the United Kingdom		715,371,000
France	425,260,000	
Holland (general, as estimated)	178,238,000	
Spain	54,646,000	
Denmark	23,958,000	
Portugal.....	15,678,000	
		697,780,000

2. Thus the total trade of the United Kingdom is a fraction (2·4 per cent.), greater than that of all the other European countries possessing colonies.

3. The corresponding proportion of the import trade is greater, being 412,311,000*l.* to 387,151,000*l.*, including the estimated general trade of Holland, or 6·4 per cent. in excess.

4. On the other hand the proportion of the export trade is 2·5 per cent. less, being 303,060,000*l.* to 310,629,000*l.*

5. The proportion which the total import and export trade of each country with its own colonies bears to its total trade in the last triennial period is as follows :—

* P. 574.

	Per Cent.
United Kingdom	26·1
Spain	9·4
Holland	6·0
France	4·2
Ditto, excluding Algeria	1·7
Denmark	2·5
Portugal	2·0

In the aggregate, the total trade of England with her colonies, as shown in Diagram D, exceeds fivefold that of all the other countries with their own colonies.

6. On the preceding calculation it must be remarked :—

(1). That Algeria contributes more than one-half to the colonial trade of France.

(2). That Holland and Spain both maintain a practical monopoly in their commercial relations with their colonies, so far as their European trade is concerned. This is effected by means of differential duties, a policy of very doubtful advantage, but which places them in a better position, as far as their trade with their colonies is concerned, than France, Denmark, and Portugal.

Not that Portugal has much compunction in the matter of differential duties. In that respect it is about on a par with its neighbour, Spain. Portugal's place at the bottom of the list is rather owing to the fact that the position and unproductiveness of its colonial possessions do not give it a chance of creating a large trade, however much it may strive to infuse some vitality into its colonial commerce by means of bounties and differential duties, now so much in vogue on the continent.

In relation to this subject I may mention, as a matter for grave consideration, and for regret to all those interested in trade, and especially colonial trade, that France, which for years has pursued a more enlightened course, is at this moment a backslider with regard to the question of differential duties, and is adopting anew the discarded policy of past centuries, by imposing upon foreign bottoms differential duties, amounting sometimes to as much as 60 per cent. Indeed so far have the French gone in this direction, that they have lately established in Madagascar a scale of differential duties directly aimed at British commerce, although the island is as yet unconquered, and French power extends to only a few places on the coast.

7. Comparing the import and export trades together, the pro-

portion which the Colonial bears to the Total trade is greater in the export trade in all countries, except the strictly colonial trade of France (excluding Algeria); but it varies greatly, being much higher in Spain and Portugal, and but trifling in Holland and Denmark, as will be seen in the following table:—

	Proportion to Total Trade of	
	Imports.	Exports.
United Kingdom	23·4	29·6
Portugal	1·7	2·5
Spain	6·8	11·9
Holland	5·9	6·1
France	3·8	4·8
Ditto, excluding Algeria	2·0	1·3
Denmark	2·4	2·5

But a further comparison of the increase or decrease of the trade of the several countries during the two periods under examination shows still more significant results:—

1. While the import trade of the United Kingdom shows an increase of 10·5 per cent., that of the other countries, with the exception of Denmark, shows an increase varying from 28 to 50 per cent.

2. The export trade of the United Kingdom has increased 8·8 per cent. That of Spain and Holland has increased by a full third; Denmark and Portugal have only increased 6·7 and 3·7 per cent. respectively, and France is absolutely stationary.

3. But while these are the proportions in the total trade, the trade of each country with its own possessions shows very different results. The import trade of the United Kingdom with its Colonies has increased 15·4 per cent.; that of France has increased less than 1 per cent., though, if Algeria be excluded, it has increased 21·7 per cent.; that of Portugal, Spain, and Holland have decreased 11, 12, and 33 per cent. respectively. A similar comparison of the export trade of the United Kingdom to its colonies exhibits less favourable results relatively to other countries, but still very satisfactory in relation to the general trade. It has increased 19·9 per cent., while the general trade has only increased 8·8 per cent.

The increase of the other countries has been respectively:—

	Per Cent.
France, excluding Algeria	27·7
Ditto, including „	22·8
Denmark	18·6
Spain	14·8
Portugal	4·6
Holland	1·4

4. If again the foreign trade of each country be separated from its colonial trade, and the two periods be compared, the results are still more striking. The disproportion in the increase of the foreign trade of England, as compared with its colonial trade is largely increased, and the importance of the latter, as compared with the value of the colonial trade of other countries, is greatly enhanced.

The comparison also shows the relative value to foreign countries of their foreign and colonial trades, which is of much interest, but I have only time on this occasion to make two remarks on it:—

1. While, during this period of eleven years, the foreign import trade of England has increased 9 per cent., its colonial import trade has increased 15·4 per cent., and while its foreign export trade has increased only 4·6 per cent., its colonial export trade has increased 20 (19·9) per cent., or more than fourfold that of the foreign trade, the percentage proportions of the increase in the two trades being respectively 71 and 33·2 per cent.
2. It will be seen that the foreign export trade of France exhibits a slight decrease, while its colonial export trade has increased more even than the British; but the extent of the latter is too small to affect greatly the proportion of the general trade given in Table III.

Percentage Increase or Decrease in the Import and Export Trade of each Country, between the Triennial Periods in Table III.

	Imports.				Exports.			
	Foreign.		Colonial.		Foreign.		Colonial.	
	+	−	+	−	+	−	+	−
United Kingdom	9·0	....	15·4	....	4·6	....	19·9	....
Portugal	29·0	....	....	11·2	3·7	....	4·6	....
Spain	58·7	....	....	12·4	36·7	....	14·8	....
Holland	45·1	....	....	33·5	37·8	....	1·4	....
France	30·8	....	0·9	....	....	1·2	22·8	....
„ without Algeria	29·5	....	21·7	....	....	0·5	27·7	....
Denmark	5·8	....	6·1	....	6·4	....	18·6	....

I had prepared a series of tables showing the increase or decrease of the trade of each country with each of its colonies, during the last ten years, 1874-76 and 1881-83, but the Appendix to this Address has already reached such dimensions that I can only add the portion relating to the United Kingdom,* for the

* Table V.

purpose of bringing before you one very important inference to be drawn from it, viz., that while the trade with the four principal possessions of Australasia, India, British North America and South Africa, constituting more than four-fifths of the whole (81·5 per cent.), have increased 24 per cent., that of all the other colonies has decreased 6 per cent.

The proportions in these four Possessions have been very different:—

	Percentage Increase of	
	Imports.	Exports.
Australasia	27·9	29·1
British India	21·9	27·5
„ North America	2·7	7·8
South Africa	35·5	40·9

The discovery of the diamond fields has doubtless caused the great increase in the trade with South Africa. It is beyond my present purpose to examine how far natural or artificial causes have contributed to create the great difference in the increase between the North American and other great possessions of the Crown, but the subject is full of interest, and would be well worthy of separate examination. It has not arisen from a change in the proportions of its trade with the United Kingdom, as will appear from the following figures: it must therefore have arisen from the rate of its increase having been slower.

Percentage Proportion of Trade with the United Kingdom to the Total Trade of each of the following Colonies.

		Imports.	Exports.
British North America	1873–75	51·3	48·0
	1880–82	48·1	50·0
„ India	1873–75	76·4	48·8
	1880–82	75·2	41 0
Australasia	1873–75	38·7	56·7
	1880–82	48·0	51·1

The chief points noticeable in this table are:—

1. At the present time India draws from the United Kingdom exactly three-fourths of its total imports; America and Australasia draw slightly less than half.

2. On the other hand India sends to the United Kingdom one-fifth less of its exports than either of the other group of Colonies.

3. In comparing the two periods of years, British North America and India have slightly fallen off in their imports from the

United Kingdom, while Australasia has increased by more than one-fourth. In the exports British North America has increased slightly, but the other two groups exhibit a considerable decrease.

Since writing the above, which I retain on account of the interesting comparisons it presents, I have been favoured by the communication of some valuable information throwing light upon the differences above shown in the trade of British North America with the United Kingdom, which, on account of the importance of the subject, I insert *in extenso*.

"The circumstances connected with the Trade and Commerce of "British North America (Canada in particular) differ from those "of the other Colonies here represented, not only from the con-"tiguity of the United States, but from the fact that Canada is a "not inconsiderable manufacturer herself, and that she has a grow-"ing foreign trade, arising partly perhaps from the position her "shipping occupies among the mercantile navies of the world.

"The years selected, namely, the averages of 1874-76, and "1881-83, are not, besides, the most favourable for British North "America in examining the growth of the trade with Great Britain. "The increase was very rapid indeed between 1869 and 1874, the "imports into the United Kingdom having risen in that period "from 7,734,531*l.* to 11,858,909*l.*, or 53 per cent.; and the exports "from 5,909,812*l.* to 10,210,985*l.*, or 73 per cent. But since 1874 "the progress has been slower and varying, the imports being in "1883 (according to the 'Statistical Abstract') 12,283,727*l.*, or an "increase of nearly 4 per cent. over the former year (1874), while "the exports were 10,109,596*l.*, showing a slight decrease.

"It is necessary also to mention that the imports continued to "increase from 1874 to 1877, the value in the latter year being "12,035,968*l.* Since that year the trade has been fluctuating, the "largest year having been 1880, when the figures were 13,388,988*l.* "The exports however to British North America decreased between "1874 and 1879 to 6,118,862*l.* They have since gone up again "rapidly to 10,109,596*l.* in 1883, which is an increase in the four "years of 65 per cent."

I must close with the notice of an important table, No. IX, which shows the Trade, import and export, of each British colony, on the average of the last three years, 1881-83, and the percentage proportion which the trade of each with the United Kingdom bears to its total trade; but I must confine myself to a few remarks.

1. The total value of the Trade was 429,501,000*l.*, which is 4,000,000*l.* greater than the total trade of France, and exactly three-fifths (60 per cent.) of that of the United Kingdom.

2. The value of the import and export Trades are equal, 214,555,000*l.* and 214,946,000*l.* respectively.

3. The proportion of the import Trade with the mother country is nearly one-half, 49·2 ; that of the export trade, 43·4, is somewhat less.

4. The countries in which the import Trade of the Colonies with the United Kingdom greatly exceeds that with foreign countries are :—

	Percentage Proportion of Import Trade with United Kingdom.	With Foreign Countries and British Colonies.
India	75·3	24·7
New Zealand	63·7	36·3
Falkland Islands	90·7	9·3
Natal	78·2	21·8
Cape of Good Hope	77·5	22·5
Lagos	59·0	41·0
Gold Coast	77·0	23·0
Sierra Leone	69·1	30·9

It will be observed that most of the African colonies come into this category.

5. The Colonies in which the export Trade with the United Kingdom greatly exceeds that with foreign countries are :—

	Percentage Proportion of Export Trade with United Kingdom.	With Foreign Countries and British Colonies.
Ceylon	64·8	35·2
New Zealand	73·3	26·7
Natal	80·0	20·0
Cape of Good Hope	89·9	10·1
Gold Coast	72·9	27·1
Jamaica	60·8	39·2
Windward Islands—		
St. Lucia	87·6	12·4
St. Vincent	76·6	23·4
Grenada	87·4	12·6
Tobago	86·7	13·3
Leeward Islands—		
St. Kitts and Nevis	62·9	37·1
Montserrat	85·7	14·3
Dominica	65·5	34·5
British Guiana	59·9	40·1
Falkland Islands	100	—

It will be observed that New Zealand, Natal, Cape of Good Hope, and Gold Coast figure in this, as in the preceding, category ; and that almost all the West Indian Islands are included in it. The exceptions are the two principal islands in the Windward and Leeward groups, viz. :—

	United Kingdom.	Foreign Countries and British Colonies.
Barbados, in which the proportions are	31·8	68·2
Antigua ,, ,,	31·2	68·8

6. The colonies in which a smaller Total trade is carried on with the United Kingdom are:—

	Percentage Proportion of Total Trade (Imports and Exports) with United Kingdom.	Foreign Countries.
Straits Settlements	22·7	77·3
Mauritius	17·4	82·6
Labuan	0·7	99·3
Tasmania	26·8	73·2
Queensland	36·3	63·7
Fiji Islands	7·9	92·1
St. Helena	29·2	70·8
Gambia	29·8	70·2
Newfoundland	31·8	68·2
Bermudas	17·4	82·6
Bahamas	21·9	78·1
Turks Island.....	6·5	93·5
Barbados	35·3	64·7
Virgin Islands	Nil	100·0
Antigua.....	37·8	62·2
Trinidad	37·2	62·8
Malta.....	17·8	82·2

7. The Trade of the following Colonies, both Import and Export, is more equally divided between the United Kingdom and other countries:—

	Percentage Proportion of			
	Imports.		Exports.	
	From United Kingdom.	Elsewhere.	To United Kingdom.	Elsewhere.
Canada, Dominion of	40·9	59·1	48·9	51·1
New South Wales	50·6	49·4	46·4	53·6
Victoria.....	47·4	52·6	46·9	53·1
Western Australia	39·6	60·4	57·0	43·0

There are no returns from Hong Kong and Gibraltar, and the trade with British Colonies is not shown separately.

8. Although the system of Free Trade opens the markets of

the whole world to all our Colonies, nearly one-half of their trade (46·3 per cent.), amounting to 199,000,000*l.* a-year, is carried on with the Mother country, notwithstanding all the influences of distance, convenience, suitableness of products, and competition of commercial rivals operating to reduce it.

I must now close my Address, which I fear has already detained you too long. Yet I feel that I have treated my great theme very inadequately. I must be satisfied if I have furnished the material for future discussion and useful reference. I will sum up with a single remark. To what conclusion do all these statements undeniably lead? To one which needs no force of argument, and which no eloquence of mine can fortify, to wit: that Britain has become great, and still maintains her greatness, in no small degree, by the possession of her Colonies, and through the bonds of kinship, of mutual interest and sympathy, which, in spite of all temporary misunderstandings and conflicting views, are yearly knitting them more closely together; and that, subject to those changes which time may bring about, and a *consensus* of interests and desires may dictate, the fixed and unwavering policy of our rulers should be, that England and her Colonies are "one and indivisible."

APPENDIX.

TABLE I.—*Statement of the several Colonies and Foreign Possessions of each European Mode of Acquisition,*

Date. A.D.	Mode of Acquisition.	Colonies and Foreign Possessions.				
		British.	Portuguese.	Spanish.	Dutch.	French and Other.
						DANISH.
858....	Settlement	—	—	—	—	Faroe Is. ....
876....	,, ...	—	—	—	—	Iceland .....
986....	,, ...	—	—	—	—	Greenland....
1420	,, ...	—	Madeira	—	—	—
1420*	,, ...	—	—	Canary Is.	—	—
1432....	,, ...	—	Azores Is.	—	—	—
1446...	,, ...	—	Coast of Guinea	—	—	—
1446*	,, ...	—	C. de Verde Is.	—	—	—
1471*	,, ...	—	St. Thomas I.	—	—	—
1471*	,, ...	—	Prince I.	—	—	—
1505...	,, ...	—	Mozambique	—	—	—
1509....	,, ...	—	—	Porto Rico....	—	—
1510....	Conquest	—	Goa.....	—	—	—
1511....	Settlement	—	—	Cuba	—	—
1534....	Cession.....	—	Diu	—	—	—
1543....	Conquest	—	Salsette	—	—	—
1543....	,, ...	—	Bardes	—	—	—
1557....	Cession.....	—	Macao.....	—	—	—
1559....	Conquest	—	Damão	—	—	—
1565....	,, ...	—	—	Philippine Is.	—	—
1575....	Settlement	—	Angola: Loanda Benguela Mossamedes	—	—	—
1583....	Possession taken	Newfoundland	—	—	—	—
						FRENCH.
1604....	Settlement	—	—	—	—	St. Pierre and Miquelon
1605....	,, ...	Barbados (Windward I.)	—	—	—	—
1607....	Conquest	—	—	—	Amboyna (Moluccas)	—
1609....	Settlement	Bermudas	—	—	—	—
1613....	Conquest and treaty	—	—	—	Ternate (Moluccas)	—
1613....	,, ...	—	—	—	Tidore (Moluccas)	—
1619....	Conquest and treaties	—	—	—	Java	—

* In these instances the dates of the first discovery of the several

APPENDIX.

Country, arranged in the Chronological Order of their Acquisition, with the Date and on 1st January, 1884.

	REMARKS.
	Settled by Norwegians. Became Danish when Norway was united to Denmark (1397); remained Danish after separation in 1814.
	Peopled from Iceland.
	Madeira incorporated with Portugal; was twice occupied by England, 1801 and 1807; restored to Portugal 1814.
	Incorporated with Spain. Have never been under other authority.
	Incorporated with Portugal. Have never been under other authority.
	Comprising three municipal Governments, viz., Cacheo, Bissao, and Bolama, with the Island of Galhinhas.
	Have never been under other authority.
	Invaded by Spaniards from Hayti; captured and abandoned by England in seventeenth century.
	Taken and held by the English between 1807 and 1815.
	The capital (Havannah) captured in sixteenth century; taken by England in 1762; restored in 1763.
	Have never been under other authority. Macao was independent of the mother country until 1622.
	The capital (Manilla) taken by English in 1762; restored in 1764.
	Have never been under other authority.
	Settled in 1623. French also formed a settlement, 1620. Title of England confirmed by Treaty of Utrecht, 1713.
	Have never been under other authority.
	Has never been under other authority.
	Other Windward Islands; St. Vincent, the Grenadines, Grenada, Tobago, and St. Lucia; these were alternately English, French, or neutral throughout the seventeenth and eighteenth centuries. The first four were ceded to England in 1763; St. Lucia capitulated in 1803.
	Settled by the Portuguese 1521-80; taken by the Dutch 1605.
	Or Somers' Islands. Have never been under other authority.
	It is not possible to fix the dates at which the Dutch became possessed of the several islands in the Molucca group, to follow their varying fortunes in conflict with the Portuguese, Spaniards and English, or to define the nature of the authority which they now exercise in most of them.
	Date of founding Batavia. First Dutch governor arrived in Bantam in 1611, and obtained leave from the King of Jacatra to build a fort and establish a factory.

groups have been given. Settlement followed gradually.

TABLE I.—*Statement of the several Colonies and Foreign Possessions of each European*

Date. A.D.	Mode of Acquisition.	Colonies and Foreign Possessions.				
		British.	Portuguese.	Spanish.	Dutch.	French and Other.
1620....	Various	India	—	—	—	—
1620....	Conquest	—	—	—	Banda (Ceram)	—
1623....	Various	Canada (Dominion of)	—	—	—	—
1623....	Settlement and cession	St. Christopher (Leeward Is.)	—	—	—	—
1629....	Settlement	Bahamas	—	—	—	—
1629....	,, ...	Turks and Caicos Is.	—	—	—	—
1631....	,, ...	Gambia (West African Settlements)	—	—	—	—
1632....	,, ...	—	—	—	St. Eustatius....	—
1632....	,, ...	—	—	—	Saba	—
1634....	Conquest	—	—	—	Curaçao ..... Aruba Bonaire	—
						FRENCH.
1635...	Settlement	—	—	—	—	Guadeloupe ....
1635....	,, ...	—	—	—	—	Martinique ....
1635....	,, ...	—	—	—	—	French Guiana (Cayenne)
1637....	,, ...	—	—	—	—	Senegal .....
1639....	Treaty and conquest	—	—	—	Celebes	—
1640 ?	Cession.....	—	—	—	Timor (western side)	—
1648....	Settlement	—	—	—	St. Martin (southern side)	—
1649....	,, ...	—	—	—	—	Réunion.....
1651....	Occupation	St. Helena ...	—	—	—	—
1655....	Capitulation	Jamaica	—	—	—	—
1661....	Settlement	Gold Coast ...	—	—	—	—
1664....	Cession and conquest	—	—	—	Sumatra.....	—

Country, arranged in the Chronological Order of their Acquisition—Contd.

REMARKS.

Date of first settlement.

First settlement of Nova Scotia 1623.
Dominion of Canada, incorporated in 1867, consists of—
Nova Scotia, first settled, 1623; ceded to England, 1763.
New Brunswick, Prince Edward Island, } ceded, 1763.
Canada { Quebec, acquired in 1759, by capitulation. Ontario, ,, 1763, by cession.
Ontario separated from Quebec 1791, by act of parliament.
Manitoba { settled by Hudson's Bay Company. erected into a province 1870.
British Columbia { settled by Hudson's Bay Company. erected into a colony 1858. incorporated 1871.
North-west Territories { taken from Hudson's Bay Company 1871. erected into a province 1876.
Leeward Islands, confederated by Act of 1871, consist of—
St. Kitts, settled 1626; ceded by Treaty of Utrecht 1713. | Antigua, settled 1632.
Nevis, settled 1628. | Montserrat, settled 1632.
Anguilla, settled 1650. | Virgin Islands, settled 1666.
Dominica, conquered, 1759.
Recolonised 1666. Title of England confirmed by Treaty of Versailles in 1783.
Separated from Bahamas, and attached to Jamaica in 1874.

Right of trade assigned to England by Treaty of Versailles 1783; newly settled in 1816; joined for certain purposes to Sierra Leone in 1866.

Taken from Spain, by whom it was settled, in 1529.

Settled by expedition from France. Its present dependencies consist of the Islands of Mariegalante, La Desirade, Les Saintes, La Petite Terre, St. Barthélemy, and northern side of St. Martin, the southern side being held by the Dutch. St. Barthélemy was colonised by France in 1648, ceded to Sweden in 1784, and restored by purchase and treaty to France in 1877.
Settled by expedition from St. Kitts.

Capital St. Louis; including Senagambia, capital Goree.
After long conflict, conquest completed in 1669.

Eastern side held by Portugal; limits defined by treaty signed at Lisbon, April 1859.

Formal possession taken 1649; occupied 1638. Name changed from "Bourbon" in 1848.
Abandoned by Dutch; occupied by East India Company; Crown colony 1833.
Captured from Spain; ceded by Treaty of Madrid 1670.
The colony now includes Lagos, which was ceded by the reigning monarch in 1861.
Date of first settlement on west coast. English settlement of Bencoolen founded in 1685. All Dutch settlements in Sumatra captured by England finally ceded to Holland in 1816, in exchange for Dutch possessions in Malacca.

TABLE I.—*Statement of the several Colonies and Foreign Possessions of each European*

Date. A.D.	Mode of Acquisition.	Colonies and Foreign Possessions.				
		British.	Portuguese.	Spanish.	Dutch.	French and Other.
1666....	Conquest	—	—	—	Surinam.....	—
1668....	,, ...	—	—	Marianne Is. (Ladrone Is.)	—	—
						DANISH.
1672....	,, ...	—	—	—	—	St. Thomas, &c. (Virgin Is.)
1680?	Conquest	—	Timor (east side)	—	—	—
						FRENCH.
1683....	Various	—	—	—	—	Indian settlements
1686....	Conquest	—	—	Caroline Is.	—	—
1690....	Settlement	—	Ajuda (Dahomey)	—	—	—
1690....	Conquest	—	—	Pellew Is.	—	—
1704....	Capture	Gibraltar.....	—	—	—	—
1705....	Cession.....	—	—	—	Madura	—
1750....	Cession and treaty	—	—	—	—	St. Marie I. (Madagascar)
1778....	Cession	—	—	Fernando Po Annabon I. Corisco I. Elobey Is. San Juan	—	—
1780?	,, ...	—	—	—	Borneo (west coast)	—
1783–6	Treaties	Honduras, British	—	—	—	—
1785....		Penang I. (Straits Settlements)	—	—	—	—
1787....	Settlement	New S. Wales	—	—	—	—
1787....	,, ...	Victoria	—	—	—	—
1787....	Cession	Sierra Leone (W. Africa Settlements)	—	—	—	—
1787?	,, ...	—	—	—	Borneo (S.E. coast)	—
1795....	Capitulation	Ceylon	—	—	—	—
1797....	,, ...	Trinidad	—	—	—	—
1800....	Capture	Malta	—	—	—	—
1803....	Capitulation	British Guiana	—	—	—	—
1803....	Settlement	Tasmania.....	—	—	—	—

Country, arranged in the Chronological Order of their Acquisition—Contd.

REMARKS.

First settled by an Englishman in 1630; taken by Dutch in 1666; recognised as Dutch at Peace of Breda, 1667.

Danish Virgin Islands: St. Thomas, settled in 1672; St. John, a few years later; St. Croix about the same time.

Western portion held by Holland; limits defined by treaty signed at Lisbon, April 1859.

Consisting of Pondichery (Coromandel), bought from native sovereign, 1683.
Karikal (Malabar), bought from King of Tagore, 1739.
Chandernagore (Bengal), ceded by Aurung Zeb, 1688.
Mahé (Malabar) acquired 1627.
Masulipatam (S. Circars), } „ 1752.
Yanaon (Orissa), }
with small factories (loges), mostly leased out at Calicut, Surat, and other places.

Of the extensive possessions of Portugal on this coast, there remains only the ruined Fort of St. Jean Baptiste of Ajuda, with a small rayon.

Taken from Spain; ceded by Peace of Utrecht 1713.

Abandoned; resumed possession, 1821; occupied, 1843.

Settled and occupied by Portugal; ceded to Spain 1778; British military [settlement established thereon, with permission of Spain, 1827; abandoned 1834; Spain resumed possession 1844. Annobon and Corisco Islands discovered by Portugal in 1469-71.

Ceded by King of Bantam.

Under the Government of Jamaica until 1862, when it was erected into a colony.

The Straits Settlements, incorporated in 1826, consist of—
Penang, ceded by Sultan of Kedah 1785.
Two districts on mainland, acquired 1798 and 1874.
Malacca, taken from the Dutch 1795; restored 1818; exchanged 1824.
Singapore, acquired from Malayan Princes 1819.
Includes Norfolk Island
Settled from New South Wales 1836; separated, 1851.
Ceded by native chiefs 1787; Charter granted to Sierra Leone Company 1791; incorporated for certain purposes with Gambia, and formed into West African Settlements, 1866.

Ceded by native king.

Dutch settlements taken and annexed to Madras; established as a separate colony 1801; ceded by Treaty of Amiens 1802; the whole island declared British in 1815. Cocos (or Keeling) Islands annexed. Maldive Islands are tributary.
Taken from Spain. Ceded by Treaty of Amiens 1802
Taken from France. Ceded by Treaty of Paris 1814. Dependency, Gozo Island.
Taken from Holland. Ceded by Treaty of Paris 1814.
First Governor appointed, 16th February, 1804.

TABLE I.—*Statement of the several Colonies and Foreign Possessions of each European*

Date. A.D.	Mode of Acquisition.	Colonies and Foreign Possessions.				
		British.	Portuguese.	Spanish.	Dutch.	French and Other.
1806....	Capitulation	Cape of Good Hope	—	—	—	—
1807....	Capture	Heligoland	—	—	—	—
1810....	Capitulation	Mauritius	—	—	—	—
1815....	Taking possession	Ascension I.	—	—	—	—
1816....	Treaty	—	—	—	Billiton Banca	—
1828....	Taking possession	—	—	—	N. Guinea	—
						FRENCH.
1829....	Settlement	W. Australia	—	—	—	—
1830....	Conquest	—	—	—	—	Algeria .....
1833....	Settlement	Falkland Is.....	—	—	—	—
1836....	,, ...	S. Australia....	—	—	—	—
1838....	,, ...	Natal	—	—	—	—
1838....	Cession.....	Aden	—	—	—	—
1841....	Settlement	New Zealand	—	—	—	—
1841–3	Cession and treaty	Hong Kong....	—	—	—	—
1843....	,, ...	—	—	—	—	Marquesas .....
1843....	,, ...	—	—	—	—	Nossi-Bé .....
1843....	,, ...	—	—	—	—	Mayotte.....
1843....	,, ...	—	—	—	—	Gaboon .....
1843....	,, ...	—	—	—	—	Gold Coast Settlements
1847....	Cession.....	Labuan I.....	—	—	—	—
1853....	Conquest	—	—	—	—	New Caledonia, I. of Pines
1855....	Cession	Perim I.	—	—	—	—
1859....	Settlement	Queensland	—	—	—	—
1861....	Cession	Lagos	—	—	—	—
1862....	Conquest and cession	—	—	—	—	Cochin China
1863....	Protectorate under treaty	—	—	—	—	Cambodia .....
1864....	Capture	—	—	—	—	Loyalty Is. ....
1874....	Cession.....	Fiji Is.....	—	—	—	—
1878....	Conditional occupation under treaty	Cyprus.....	—	—	—	—
1880....	Cession.....	—	–	—	—	Tahiti.....
1881....	,, ...	—	—	—	—	Tuamotu (Iles Basses)
1881....	,, ...	—	—	—	—	Tubuai & Rapa
1881....	Protectorate under treaty	—	—	—	—	Tunis .....

Country, arranged in the Chronological Order of their Acquisition—Contd.

REMARKS.
Taken from Holland. Ceded by Treaty of Paris 1814. In 1845 Natal was annexed to the Cape Colony, but separated in 1856. Colony extended to the Transkei Territory in 1846, to Basutoland in 1868; Fingoland, Idutywa Reserve, and No-man's Land in 1876; the Port of Walwich Bay in 1878; Griqualand West in 1880; Tembuland, Emigrant Tambookieland, Bomvanaland, Gcalekaland, and St. John's River Territory, in 1881.
Taken from Denmark. Ceded by Treaty of Kiel 1814.
Taken from France. Ceded by Treaty of Paris 1814. Its dependencies consist of the Seychelles Islands, Rodrigues, Diego Garcia, and about 70 small scattered islands.
Ceded to England by Sultan of Palembang in 1812, and transferred with Sumatra to Holland in 1816.
Extended by further Act in 1848.
Originated in the Swan River Settlement.
Treated as a province of France, not as a colony.
Held by French and Spaniards from 1763 to 1771, when abandoned to England, but not occupied until 1833.
Settled from New South Wales.
Settled by Dutch Boers from the Cape 1837-38; annexed by proclamation 1843; united to the Cape Colony 1845; separated 1856.
Under Government of India.
Sovereignty ceded by Native Chiefs, in 1840.
Cession, 1841, confirmed by Treaty of Nankin, 1842; date of Charter 1843.
Extended by further treaties in 1844 and 1862.
Consisting of Grand Bassam, Dabou, and Assinie.
Ceded by Sultan of Borneo 1847; occupied 1848.
A penal settlement.
Under Government of Aden (India).
Separated from New South Wales 1859.
United with Gold Coast, 1874.
A protectorate; ceded by the king after contest, the King of Siam having by treaty renounced his authority over the country.
Including Rothumah and Islets annexed in 1880.
Belongs to Turkey.
Protectorate established 1842; island captured 1843; protectorate re-established; king abdicated 1880.
Dependencies of Tahiti; ceded with that island.
A protectorate, ceded by the Bey, after contest.

TABLE II.—*Statement of the Area and Population of the Colonial Possessions of each European Country in each Quarter of the Globe, and of each of those Countries, on 1st January,* 1884.

	British.*		Portuguese.†		Spanish.‡	
	Area.	Population.	Area.	Population.	Area.	Population.
Europe	196	25[illegible],866	—	—	—	—
Africa	268,507	2,598,741	698,618	2,874,414	3,658	315,974
Asia	930,356	202,179,781	7,160	849,553	115,306	5,603,685
America	3,613,644	6,012,502	—	—	46,770	2,253,332
Australasia	3,117,965	2,742,550	—	—	—	—
Polynesia	7,754	126,502	—	—	—	—
Total of Colonies	7,938,422	213,917,942	705,778	3,723,967	165,734	8,175,467
Total of Mother country	120,757	35,153,780	34,499	4,160,315	192,959	16,350,874

	Dutch.		French.§		Danish.	
	Area.	Population.	Area.	Population.	Area.	Population.
Europe	—	—	—	—	40,266	83,659
Africa	—	—	269,931	5,385,229	—	—
Asia	636,329	26,743,678	55,643	2,855,519	—	—
America	46,463	97,919	48,066	400,521	46,858	43,463
Australasia	—	—	—	—	—	—
Polynesia	—	—	9,066	81,588	—	—
Total of Colonies	682,792	26,841,597	382,706	8,722,857	87,124	127,122
Total of Mother country	12,648	4,172,971	204,092	37,672,048	13,784	1,969,039

* Channel Islands transferred from mother country to European colonies.

† Azores and Madeira ditto to African colonies.

‡ Canaries and Ceuta ditto to ditto.

§ Algeria united with African colonies; the protectorates of Tunis and Cambodia included; the recent acquisitions in Tonquin not included.

TABLE III.—*Statement showing the Amount and Comparative Growth of the Trade of each European Country having Colonial Possessions; also the Total Trade of each Country, and its Trade with its own Colonial Possessions, distinguishing Imports and Exports, together with the Percentage Increase, or Decrease, on the Average of Three Years at each of the periods for which returns are available between* 1872 *and* 1883.

(From data furnished by the Board of Trade.)

[000's omitted in amount columns.]

Countries.	Periods of Comparison.		Comparative Growth of the Trade of each European Country having Colonial Possessions.							
			Total Trade.							
	Triennial Averages.		Imports.				Exports.			
			Average Annual Value.		Percentage of Difference.		Average Annual Value.		Percentage of Difference.	
	First Period.	Last Period.	First 3 Years.	Last 3 Years.	Increase.	Decrease.	First 3 Years.	Last 3 Years.	Increase.	Decrease.
			£	£			£	£		
United Kingdom	1874–76	1881–83	373,059,	412,311,	10·5	—	278,679,	303,060,	8·8	—
Portugal	1872–74	1879–81	7,289,	9,318,	27·8	—	6,133,	6,360,	3·7	—
Spain	1872–74	1880–82	18,074,	27,181,	50·4	—	20,542,	27,465,	33·7	—
Holland (special trade)	1873–75	1880–82	55,638,	75,501,	35·7	—	42,836,	57,758,	34·8	—
France	1874–76	1881–83	183,908,	237,931,	29·4	—	187,421,	187,329,	—	—
Denmark	1874–76	1880–82	12,773,	13,438,	5.2	—	9,864,	10,520,	6·7	—

Countries.	Periods of Comparison.		Trade of each Country with its own Possessions.							
	Triennial Averages.		Imports.				Exports.			
			Average Annual Value.		Percentage of Difference.		Average Annual Value.		Percentage of Difference.	
	First Period.	Last Period.	First 3 Years.	Last 3 Years.	Increase	Decrease.	First 3 Years.	Last 3 Years.	Increase.	Decrease.
			£	£			£	£		
United Kingdom	1874–76	1881–83	83,640,	96,551,	15·4	—	74,905,	89,807,	19·9	—
Portugal	1872–74	1879–81	179,	159,	—	11·2	151,	158,	4·6	—
Spain	1872–74	1880–82	2,119,	1,857,	—	12·4	2,871,	3,295,	14·8	—
Holland (special trade)	1873–75	1880–82	6,698,	4,454,	—	33·5	3,503,	3,554,	1·4	—
France	1874–76	1881–83	9,144,	9,228,	0·9	—	9,632,	11,828,	22·8	—
Ditto excluding Algeria			4,420,	5,380,	21·7	—	2,988,	3,816,	27·7	—
Denmark	1874–76	1880–82	310,	329,	6·1	—	220,	261,	18·6	—

Note.—The general trade of Holland has not been published since the year 1871. The excess of the general (*i.e.*, home and transit trades) over the special trade on the average of the three years 1869-71 was 31·5 per cent. for imports and 36·7 per cent. for exports. Applying the same proportions to the period 1880-82, the general imports and exports of Holland would amount to 99,283,000*l.* and 78,955,000 respectively. The export trade of Holland given in this Dutch table includes colonial produce re-exported.

TABLE IV.—*Statement showing the Proportion which the Trade (Import and Export) of each European Country with its own Possessions, bore to its Total Trade on the Average of the Years at the end of the Past Decennial Period for which Returns are available.*

(Compiled from the preceding table.)

Countries.	Periods of Comparison.		Percentage Proportion to Total Trade.					
	Triennial Averages.		Imports.		Exports.		Total.	
	First Period.	Last Period.	First 3 Years.	Last 3 Years.	First 3 Years.	Last 3 Years.	First 3 Years.	Last 3 Years.
United Kingdom	1874–76	1881–83	22·4	23·4	26·9	29·6	24·3	26·1
Portugal	1872–74	1879–81	2·5	1·7	2·5	2·5	2·5	2·0
Spain	1872–74	1880–82	11·7	6·8	13·9	11·9	12·9	9·4
Holland (special trade)	1873–75	1880–82	12·0	5·9	8·2	6·1	10·4	6·0
France	1874–76	1881–83	4·8	3·8	4·2	4·8	4·5	4·2
Ditto, excluding Algeria			2·3	2·0	1·2	1·3	1·7	1·7
Denmark	1874–76	1880–82	2·4	2·4	2·2	2·5	2·3	2·5

Note.—The special exports of Holland include Dutch colonial produce re-exported.

TABLE V.—*Statement of the Trade of the* UNITED KINGDOM *with each of its principal Colonies, showing the Annual Average Value of Imports and Exports, in each of the Triennial Periods* 1874-76 *and* 1881-83, *with the Percentage Increase or Decrease.*

[Omitting thousands]

Colonies.	Imported.		Exported.		Percentage Difference.	
	Average of 1874-76.	Average of 1881-83.	Average of 1874-76.	Average of 1881-83.	Imports.	Exports.
	£	£	£	£		
Channel Islands	678,	804,	846,	799,	+18·5	− 5·5
Gibraltar	81,	33,	1,184,	809,	−59·8	−31·6
Malta	244,	159,	972,	1,162,	−34·8	+19·0
West African Settlements	134,	222,	326,	365,	+65·6	+11·9
The Gold Coast	496,	402,	530,	473,	−19·0	−10·7
Cape of Good Hope and Natal	4,323,	5,861,	4,912,	6,923,	+35·5	+40·9
Mauritius	935,	437,	453,	536,	−53·2	+18·3
North American colonies	11,032,	11,328,	9,306,	10,033,	+ 2·7	+ 7·8
West Indian Islands and Guiana	6,803,	5,704,	3,336,	3,373,	−16·1	+ 1·1
British Honduras	209,	230,	141,	127,	+10·5	− 9·9
„ India	30,456,	37,144,	24,902,	31,672,	+21·9	+27·5
Straits Settlements	2,799,	4,336,	2,324,	2,677,	+55·0	+15·1
Ceylon	3,672,	2,239,	1,169,	793,	−39·0	−32·1
Hong Kong	1,086,	1,206,	3,670,	3,330,	+11·0	− 9·0
Australasia	20,356,	26,035,	20,455,	26,424,	+27·9	+29·1
Other possessions	305,	416,	374,	305,	+36·4	−18·4
Total	83,639,	96,550,	74,904,	89,806,	+15·4	+19·9

TABLE VI.—*Detailed Statement of the Area, Population, and Date of Acquisition of the several Colonial Possessions of each European Country in each Quarter of the Globe on 1st July*, 1884.

UNITED KINGDOM. (TABLE VI A.)

(Taken from the Statistical Abstract for the several Colonial and other Possessions of the United Kingdom, published by the Board of Trade, 1884, and from the "Statesman's Year Book," 1884.)

	Date of Acquisition.	Area. — English Square Miles.	Population.	
			Date.	Number.
Mother country	—	120,757	1881	35,241,482[a]
POSSESSIONS.				
In Europe—				
Channel Islands	1066	75		87,702[b]
Gibraltar	1704	1¾	1881	18,381[c]
Malta and Gozo	1800	119	,,	149,782[e]
Heligoland	1807	⅛	,,	2,001
Total, Europe	—	196	—	257,866
In Africa—				
Gambia	1631	69	1881	14,150[d]
St. Helena	1651	47	,,	5,059
Gold Coast	1661	6,000	,,	400,000?[e]
Sierra Leone	1787	468	,,	60,546[f]
Cape of Good Hope	1806	240,108	,,	1,249,824[g]
Mauritius	1810	708	,,	377,373
Ascension	1815	34	,,	300
Natal	1838	21,000	,,	416,219
Lagos	1861	73	,,	75,270[h]
Total, Africa	—	268,507	—	2,598,741
In America—				
Newfoundland	1583	40,200	1881	179,509
Windward Islands	1605	797	,,	311,413[i]
Bermudas	1609	19	,,	13,948
Canada, Dominion of	1623 / 1759	3,470,392	,,	4,324,610[j]
Leeward Islands	1626	668	,,	119,545[k]
Bahamas	1629	5,390	,,	43,521
Turks or Caicos Islands	1629	169	,,	4,732[l]
Jamaica	1655	4,193	,,	580,804
Honduras, British	1783-86	7,562	,,	27,452
Trinidad	1797	1,754	,,	153,128
Guiana, British	1803	76,000	,,	252,186
Falkland Islands	1833	6,500	,,	1,553
Total, America	—	3,613,644	—	6,012,502
In Asia—				
India	1625	904,135	1881	198,790,853[m]
Straits Settlements	1785	1,445	,,	423,384
Ceylon	1795	24,702	,,	2,763,984
Aden	1838	5	,,	34,711
Hong Kong	1842	32	,,	160,402
Labuan	1846	30	,,	6,298
Perim	1855	7	,,	149
Cyprus	1878	(3,700)	,,	(185,916[n])
Total, Asia	—	930,356	—	202,179,781

TABLE VI.—*Area, Population, and Date of Acquisition—Contd.*

	Date of Acquisition.	Area. — English Square Miles.	Population in 1881. Date.	Number.
In Australasia—				
New South Wales and Norfolk Island	1787	325,000	1881	751,468
Victoria	1787	88,198	,,	862,346
Tasmania	1803	26,215	,,	115,705
Western Australia	1829	1,000,000 ?	,,	29,708
South ,,	1836	903,690	,,	279,865[o]
New Zealand	1841	105,342	,,	489,933[o]
Queensland	1859	669,520	,,	213,525
Total, Australasia	—	3,117,965	—	2,742,550
In Polynesia (Océanie)—				
Fiji Islands	1874	7,740	1881	124,002[p]
Rotumah	1881	14	,,	2,500[p]
Total, Polynesia	—	7,754	—	126,502
Total		7,938,422		213,917,942

[a] Excluding the Channel Islands, shown below, and including 215,274 army, navy, and merchant seamen abroad.
[b] Are usually included in the United Kingdom, but have a separate legislature.
[c] Exclusive of military.
[d] Now included, with Sierra Leone, in "West African Settlements."
[e] See remark below on Lagos.
[f] See remark above on Gambia.
[g] Including—

	Sq. Miles.	Population.
Basutoland	10,293	128,176
Transkei	12,065	154,501
Griqualand West	17,800	45,277

[h] Now united to Gold Coast.
[i]

	Sq. Miles.	Population.		Sq. Miles.	Population.
Barbados	166	171,860	Tobago	114	18,051
St. Vincent	147	40,548	St. Lucia	237	38,551
Grenada	133	42,403			

Provinces—	Sq. Miles.	Population.		Sq. Miles.	Population.
Ontario and Quebec	290,421	3,282,255	Prince Edward's Island	2,133	108,891
New Brunswick	27,174	321,233	British Columbia and Vancouver's Island	341,305	49,459
Nova Scotia	20,907	440,572	N. West Territory, &c.	2,665,252	56,446
Manitoba	123,200	65,954			

[k]

	Sq. Miles.	Population.		Sq. Miles.	Population.
Antigua	170	34,964	Montserrat	32	10,083
St. Christopher (St. Kitts)	68	29,137	Dominica	291	28,211
Nevis	50	11,864	Virgin Islands	57	5,287

[l] Now united to Jamaica.
[m] Exclusive of the feudatory native States, with an estimated area of 509,284 square miles, and a population of 55,150,456 by census of 1881.

	Sq. Miles.	Population.
Bengal	156,564	66,691,456
Assam	46,341	4,881,426
N.W. Provinces and Oudh	106,111	44,.07,869
Punjaub	106,632	18,850,437
Central Provinces	84,445	9,838,791
Madras	139,900	30,868,504
Bombay	—	—
British Burmah	124,122	16,454,414
Total	874,220	198,755,993

"Statesman's Yaar Book."

[n] Area and population not included in total of Asiatic possessions.
[o] Exclusive of aborigines.
[p] From "Statesman's Year Book."

PORTUGAL. (TABLE VI B.)

(Taken from the Statistical Abstract for the principal and other foreign countries, published by the Board of Trade, 1883, and from the "Statesman's Year Book," 1884.)

	Date of Acquisition.	Area. — English Square Miles.	Population. Date.	Population. Number.
Mother country	—	34,499	1878	4,160,315*
POSSESSIONS.				
In Africa—				
Azores	1431	966	1878	259,800
Madeira and Porto Santo	1419	317	„	130,584
Cape de Verde Islands	1460	1,650	1879	99,317
Senegambia (Portuguese Guinea)		*26a*	1873	9,282
St. Thomas Island, Prince's Island	1470	454	1878–79	20,931
Ajuda, on Mainland, Gold Coast		13	1873	4,500
Angola:	1575	312,509*b*		2,000,000*c*†
Provinces:				
Loanda		—		—
Benguela		—		—
Mossamedes		—		—
Mozambique and Islands	1505	382,683*d*		350,000*e*†
Total, Africa	—	698,618	—	2,874,414
In Asia—				
Goa, Bardes, Salsette, &c.	1510	1,447	1881	419,993
Diu	1534	158	„	61 474
Damao	1559			
Macao	1557	28	1880	68,086
Timor (eastern part) and Island of Pulo Cambing	1680	5,527		300,000†
Total, Asia	—	7,160	—	849,553
Total	—	705,778	—	3,723,967

* Exclusive of Azores and Madeira, shown below.

† The authority for these is the "Statesman's Year Book;" but all the figures are probably very problematical.

Mr. Ravenstein substitutes for some of the above figures, areas measured and population estimated, *a*, 350; *b*, 115,000; *c*, 1,000,000; *d*, 80,000; *e*, 600,000; and adds Landana, occupied in 1883, area 100 square miles; population, 10,000.

SPAIN. (TABLE VI c.)

(Taken from the Statistical Abstracts for the principal and other foreign countries, published by the Board of Trade, 1883, and from the "States-"man's Year Book," 1884.)

	Date of Acquisition.	Area. — English Square Miles.	Population.	
			Date.	Number.
Mother country	—	192,959	1877	16,350,894*
POSSESSIONS.				
In America—				
Cuba	1509	43,220	1877	1,521,684
Porto Rico	1511	3,550	—	731,648
Total, America	—	46,770	—	2,253,332
In Asia—				
Philippine Islands	1565	114,326	—	5,559,020
Caroline ,,	1686–90	560	—	36,000
Pellew ,,				
Marianne (or Ladrone) Is.	1666	420	—	8,665
Total, Asia	—	115,306	—	5,603,685
In Africa—				
Canary Islands	1420	2,808	—	280,974†
Ceuta and the Presidios	1580	—	—	2,476
Fernando Po	1778	850	—	35,000
Annabon I.	—			
Corisco I.	—			
Elobey Is.	—			
San Juan	—			
Total, Africa	—	3,658	—	318,440
Total	—	165,734	—	8,175,467

* Exclusive of the Canary Islands, shown below.

† Incorporated with Spain as a province.

HOLLAND. (TABLE VI D.)

(Figures taken from the "Statesman's Year Book" for 1884.)

	Date of Acquisition.	Area in English Square Miles.		Population in 1881. Date.	Number.	
Mother country		—	12,648	1883*	—	4,172,971*
POSSESSIONS.						
In Asia—						
Java	1619	—	50,848	1881		20,088,613
Madura	1705					
Sumatra:						
West coast	1664	46,200	—		1,115,721	—
East "	1816†	16,282	—		147,730	—
Bencoolen		9,576	—		146,105	—
Palembang		61,152	—		617,170	—
Lampong		9,975	—		129,297	—
Atjeh (Atchin)	1816?	6,370	—		479,474	—
Total, Sumatra	—	—	149,555		—	2,635,497
Riouw-Lingga group	—	—	17,325		—	100,957
Banca	1816†	—	4,977		—	69,856
Billiton	1816†	—	2,500		—	32,166
Borneo:						
West coast	1780	58,926	—		365,669	—
South and east	1787	144,788	—		593,822	—
Total, Borneo	—	—	203 714		—	959,491
Celebes:						
Macassar	1639	45,150	—		378,050	—
Menado	—	26,600	—		538,397	—
Total, Celebes	—	—	71.750		—	916,447
Molucca Islands:						
Ternate and Gilolo group	1613	?	?		?	?
Amboyna and Ceram group	1605–21	?	?		?	?
Total, Molucca Islands	—	—	42,420		—	383,272
Timor (western part)	1640					
Sumba (Sandalwood)	1640	—	21,840		—	800,000?
Flores	—					
Bali	—	—	3,990		—	1,357,379
Lombok	—					
Other Islands in group	—	—	?		—	—
New Guinea	1828	—	67,410‡		—	200,000?
Total, Asia	—	—	636,329		—	26,743,678
In America—						
Surinam	1666	—	46,000		—	53,853
West Indies—						
Curaçoa	1634	210	—		25,421	—
Aruba	1634	69	—		5,598	—
Bonaire	1634	95	—		5,218	—
St. Martin (southern side)	1643	17	—		3,359	—
St Eustatius	1632	7	—		2,247	—
Saba	1632	5	—		2,223	—
			403			44,066
Total, America	—	—	46,463	—	—	97,919
Total	—	—	682,792	—	—	26,841,597

* Estimated population 1st January, 1883. Population by census of 1879 was 4,012,693.

† Dutch claims admitted, and English territory in these islands ceded by England in exchange for territory in Malacca, and in settlement of territorial and commercial disputes in the Eastern Archipelago.

‡ A more accurate estimate of the area gives 153,410 square miles.

FRANCE. (TABLE VI E.)

(Taken from the "Notices Statistiques sur les Colonies Françaises," published by the Ministère de la Marine et des Colonies, 1884, and from the "Statesman's Year Book, 1884.")

	Date of Acquisition.	Area. — English Square miles.	Population. Date.	Number.
Mother country	—	204,092	1881	37,672,048
POSSESSIONS.				
In Africa—				
Algeria	1837	122,909	81	3,310,412
Senegal	1637	96,261?	81	191,608
Gaboon and Gold Coast	1843	7,722?	81	186,133?*
Réunion	1649	764	81	172,084
St. Marie	1750	} 320	81	{ 7,189
Nossi-Bè	1843			{ 9,009
Mayotte	,,			{ 8,794
Total, Africa	—	227,931	81	3,885,229
In America—				
Guiana (Cayenne)	1635	46,873	81	27,035
Martinique	,,	381	81	167,181
Guadeloupe and dependencies	,,	721	81	200,771
St. Pierre and Miquelon	1604	91	81	5,534
Total, America	—	48,066	81	400,521
In Asia—				
Possessions in India	1683†	189	81	285,022†
Cochin-China	1862	22,957	81	1,550,497
Total, Asia	—	23,265	81	1,835,519
In Polynesia (*Océanie*)—				
New Caledonia, Island of Pines, Loyalty Islands	1854	7,653	81	56,341‡
Marquesas Group	1843	492	81	5,776
Tahiti and Moorea (Society Is.)	1880	455	81	10,808
Tuamatu and Gambier Groups	,,	386	81	7,970
Tubuai Group, and Rapa Island	,,	80	81	693
Total, Polynesia	—	9,066	81	81.588
Total	—	308,139	81	6,202,857
PROTECTORATES.				
In Africa—Tunis	—	42,000	81	1,500,000§
,, *Asia*—Cambodia	—	32,378	81	1,020,000
Total Colonies and Protectorates	—	382,706	81	8,722,857

* Number unknown; 200 Europeans on the coast.

† The native population (281,827) living outside French jurisdiction.

‡ Taking the native population of New Caledonia at 30,000, and that of the Loyalty Islands at 14,000, the mixed population of the former island will be 12 341, thus divided:—

Civilians	2,500
Officials	1,541
Convicts under sentence	6,500
,, liberated	2,300
Total	12,341

§ Pages 715—16 of "Statesman's Year Book."

DENMARK. (TABLE VIF.)

(Taken from the "Statesman's Year Book," 1884.)

	Date of Acquisition.	Area. — English Square Miles.	Population.	
			Date.	Number.
Mother country	—	13,784	1880	1,969,039
POSSESSIONS.				
In Europe—				
Faroe Islands	858	510	,,	11,221
Iceland	876	39,756	,,	72,438
Total, Europe	—	40,266	—	83,659
In America—				
Greenland	986	46,740	1882	9,700
West Indies—				
St. Croix	—	74	1880	18,430
St. Thomas	1672	23	,,	14,389
St. John	—	21	,,	944
Total, America	—	46,858	—	43,463
Total	—	87,124	—	127,122

TABLE VII.—*Statement of the Number of German Emigrants and their Families in the principal Countries of the World at the most Recent Date.*

(Abstracted from "Deutsche Kolonien," by Karl Emil Jung, 1884.)

	Date.	Number.	
America—			
United States	1880	1,966,742*	
Mexico	,,	1,500	
Venezuela	1881	1,171	
Brazil		210,000	
Uruguay	1880	2,125	
Argentine Republic		8,616	
Chili	1876	5,028†	
Perú		1,672	
			2,196,854
Australia—			
Queensland	1881	11,638	
South Australia	,,	8,798	
Victoria	,,	8,571	
New South Wales	,,	7,521	
New Zealand	,,	4,819	
Tasmania	,,	782	
Polynesia—			
Hawaii	,,	272	
Honolulu	,,	120	
			42,521
Africa—			
Egypt		3,359‡	
British Kaffraria		3,000	
Cape Town and district		5,000	
Port Elizabeth		300	
Kimberley		? §	
			11,659
Europe—			
Russia	1870	983,659	
Hungary	1880	1,882,371	
Galicia		324,336	
Bukowina		108,820	
Roumania	1878	20,000	
Turkey—			
Constantinople		? ‖	
Elsewhere		900	
Asia—			
Smyrna		800	
Syria		259	
			3,321,135
Total			5,572,169
To be added, omitted in the above—			
Canada, Dominion of	1881	254,319	
United Kingdom	,,	49,005¶	
			303,324
Total			5,875,493

* Exclusive of 4,500,000 born of German parents, and of 125,550 Austrians, enumerated at the last Census.

† Of whom 350 Austrians. ‡ Of whom 2,480 Austrians.

§ Several hundreds. ‖ Several thousands. ¶ Of whom 2,634 Austrians.

TABLE VIII.—*Statement of the Emigration to the United States from the United Kingdom, Germany and France, in the Years* 1820-83.

(Taken from "Deutsche Colonisation," by Hübbe-Schleiden (1881), and continued from the "Statesman's Year Book," 1884.)

Years.	United Kingdom.		Germany.		France.	
	Total.	Annual Average.	Total.	Annual Average.	Total.	Annual Average.
1820–30....	81,827	7,438	7,583	689	8,868	806
1831–40....	283,191	28,319	148,204	14,820	45,575	4,557
1841–50....	1,047,763	104,776	422,477	42,247	77,262	7,726
1851–60....	1,338,093	133,809	907,780	90,778	76,358	7,635
1861–70 ...	1,106,976	110,697	784,719	78,471	37,749	3,774
1871		143,937		107,201		5,780
1872		157,905		155,595		13,782
1873		159,355		133,141		10,813
1874		100,422		56,927		8,741
1875	793,646	66,179	612,086	36,565	68,387	8,607
1876		42,243		31,323		6,723
1877		35,556		27,419		5,127
1878		38,082		29,313		4,159
1879		49,967		34,602		4,655
1880		144,876		84,638		4,313
1881	636,109	153,718	740,539	210,485	20,364	5,227
1882		179,423		250,630		6,003
1883		158,092		194,786		4,821
Total	5,287,605	—	3,623,388	—	334,563	—

TABLE IX.—*Statement showing the Annual Value of Imports and Exports into and from the several Colonial, and other, Possessions of Great Britain, and the Percentage Proportion which the Import, Export, and Total Trade with the United Kingdom bore to the Total Trade of each Colony, on the Average of the Triennial Period* 1881-83.

[000's omitted.]

Colonies.	Total Trade of each Colony.		Percentage Proportion of Trade with United Kingdom to Total Trade.		
	Imports.	Exports.	Imports.	Exports.	Total.
In Europe—	£	£			
Gibraltar	No returns				
Malta	22,821,	21,907,	0·5	35·8	17·8
In America—					
Canada, Dominion of*	24.792,	20,730,	40·9	48·9	44·6
Newfoundland	1,691,	1,519,	37·2	25·8	31·8
Bermudas	261,	96,	23·0	2·0	17·4
Honduras	235,	267,	53·2	55·8	54·6

* Years ended 30th June.

TABLE IX.—*Annual Value of Imports and Exports—Contd.*

[000's omitted.]

Colonies.	Total Trade of each Colony.		Percentage Proportion of Trade with United Kingdom to Total Trade.		
	Imports.	Exports.	Imports.	Exports.	Total.
In America—Contd.	£	£			
West India Islands—					
Bahamas	206,	141,	21·3	22·7	21·9
Turks Islands	26,	28,	11·6	1·5	6·5
Jamaica*	1,436,	1,399,	53·7	60·8	57·2
Windward Islands—					
St. Lucia	148,	202,	41·2	87·6	68·0
St. Vincent	143,	154,	51·0	76·6	64·3
Barbados	1,146,	1,158,	38·9	31·8	35·3
Grenada	134,	191,	56·7	87·4	74·8
Tobago	51,	60,	53·0	86·7	71·1
Leeward Islands—					
Virgin Islands	6,	5,	nil	nil	nil
St. Kitts and Nevis	215,	283,	45·5	62·9	55·4
Antigua	172,	224,	47·1	31·2	37·8
Montserrat	27,	35,	33·3	85·7	62·9
Dominica	69,	61,	43·5	65·5	54·6
Trinidad	2,430,	2,413,	34·4	39·9	37·2
British Guiana	2,036,	2,992,	54·2	59·9	57·2
Falkland Islands	43,	83,	90·7	100·0	96·8
In Africa—					
Gambia	178,	201,	45·5	15·4	29·8
Sierra Leone	402,	409,	69·1	39·3	54·1
Gold Coast	391,	359,	77·0	72·9	75·1
Lagos	426,	545,	59·0	41·8	49·3
St. Helena	77,	29,	38·9	3·5	29·2
Cape of Good Hope	8,709,	4,612,	77·5	89·9	81·7
Natal	1,959,	777,	78·2	80 0	78·7
Mauritius	2,705,	3,807,	26·5	10·9	17·4
In Asia—					
India†	62,696,	81,205,	75·3	41·7	56·4
Straits Settlements	16,987,	15,516,	24·7	20·6	22·7
Ceylon	4,439,	3,045,	27 6	64·8	42·8
Labuan	129,	137,	1·5	nil	0·7
Hong Kong	No	returns			
In Australasia and Polynesia—					
New South Wales‡	17,546,	16,097,	50·6	46·4	48·6
Victoria	17,726,	16,281,	47·4	46·9	47·2
South Australia	6,081,	4,883,	53·6	55·4	54·4
Western ,,	477,	510,	39·6	57·0	48·6
Queensland	5,538,	4,117,	36·9	35·5	36·3
Tasmania	1,645,	1,625,	27·3	26·4	26·8
New Zealand	8,013,	6,605,	63·7	73·3	68·1
Fiji Islands	343,	238,	nil	19·3	7·9
Total with United Kingdom	105,718,	93,286,	49·2	43·4	46·3
Total with Foreign Countries and British Possessions	108,837,	121,660,	50·8	56·6	53·7
Total	214,555,	214,946,	100·0	100·0	100·0

* Years ended 30th September. † Years ended 31st March. ‡ Average of 1880-83.

Proceedings *on the* 18*th* November, 1884.

After the formal business of the meeting,

The President, Sir Rawson W. Rawson, said his next duty was a very pleasant one, namely to present to the successful candidate for the Howard medal the testimony of the Society to his success. The medal was first offered in 1874, and since then the number of competing essays sent in had risen from one in 1875 to eight last year, showing the interest that had been taken in the matter. This year it was felt that, after ten years of a variety of subjects immediately connected with Howard's work, the time had arrived when the scope of the scheme should be enlarged to include valuable information which might be more useful than a continual recurrence to the period of Howard's work. In May last the Council resolved to extend the subjects to the labours of those who had followed in Howard's footsteps. This year the topic selected was "The Preservation of Health," which was only indirectly connected with Howard's chief work. For the purpose of considering how best to carry out the new proposal, it had been decided to defer the offer of a medal for one year. This year six essays had been received, and Dr. Dukes, of Rugby, had gained the medal. He certainly deserved it for the trouble he had taken in the consideration of the subject, and the scope and arrangement of the details contained in his essay.

The President having presented the Howard Medal with a cheque of 20*l.* to Dr. Clement Dukes, M.R.C.P. Lond., and Physician to Rugby School and to Rugby Hospital, said there were a few matters connected with the Society which *en famille* he should like to advert to, but which he had not thought it desirable to introduce into the printed record of his address. Three events had occurred during the past year which were of importance to the members of the Society. The first was the change of abode. Through the elevation of Dr. Barry to the Archbishopric of Sydney, they had had to leave King's College, and they had taken a house in Adelphi Terrace. It was an eligible situation, but he was sorry to say that the expense of moving and the high rent would become a heavy burden upon the Society. He mentioned this with the desire of encouraging those who took an interest in the welfare of the Society, to get their friends to join in the good work, which was for the benefit of all classes. Thirty-five new members had been elected on this occasion, but at least 350 were required. The Royal Geographical Society had 3,300 members. That might be accounted for by the fact that the topics there discussed were very interesting; but looking at the importance of the questions dealt with by the Statistical Society, they ought to interest an equal number of persons. He therefore hoped that there would be a great increase of members, so that the Society might become still more useful.

The next point to which he wished to allude was the preparation of the library catalogue. The Society had a very good library of statistical works which would be found very useful to the members, and to all who desired to obtain information of a statistical nature. The catalogue had been published, and an index was being prepared. His particular reason for mentioning this was to invite any members of the Society who took an interest in this subject, but were not members of the Council, to associate themselves with the library committee, for the purpose not only of bringing out an excellent index, but of completing the library with the latest and best statistical works. They had had the benefit of Mrs. Newmarch's most liberal grant of the valuable library of their late friend and colleague Mr. Newmarch, but a good many works were still required in order to complete a good statistical library. One of the labours he had proposed to himself to carry out during his tenure of office, was to try and make the library as complete as possible. Funds would be required, and they would no doubt be forthcoming if it was shown that certain works were wanted. The third matter to which he would refer was that last year was the Society's jubilee year, but in consequence of the lamented death of the H.R.H. the Duke of Albany, it was not commemorated in the way that was thought desirable. The Council had, however, decided to do this next year, and he hoped that all the members would unite with the Council in making it worthy of the position of the Society. He might be excused one personal remark. The jubilee of the Society occurred last year; the jubilee of his connection with the Society would be next year. He was one of the first honorary secretaries, the first editor of the *Journal*, and now he had the honour of being the President. He was separated from the Society for more than thirty years, but on his return to England he was invited to rejoin the Council, and he would be very ungrateful for the kindness he had received both in his early years and since, if he did not give his best exertions to the promotion of the Society during his tenure of office.

(The President then delivered his Address.)

Dr. Balfour in moving a cordial vote of thanks to the President for his very able address, said that everyone present must appreciate the amount of labour that had been expended in preparing it.

Mr. Frederick Young, Hon. Secretary to the Colonial Institute, seconded the vote of thanks. He said the address had been one of the greatest treats that the Society could possibly have. It was a most remarkable paper, ranging over such a wide extent of matter that it seemed to include the functions of the Royal Geographical Society, the Historical Society, and the Royal Colonial Institute, as well as those of the Statistical Society. He hoped that the address would be circulated far and wide throughout the British Empire, for it was a most important educational document. He felt honoured in being asked to second the vote of thanks to the President for his very able, instructive, and interesting address.

Rev. I. Doxsey said he felt that the Society was greatly indebted to the Council for choosing Sir Rawson Rawson as President. It was a position to which he was entitled by seniority as well as by ability; by width of information, and by intense sympathy with the Society. He cordially supported the resolution, and at the same time most heartily thanked the Council for the appointment of so excellent a President for the current year.

The resolution was carried by acclamation.

The President expressed his thanks for the kind words that had been uttered by the proposer, seconder, and supporter of the vote of thanks. It would indeed be strange if he did not feel an interest in the Society, for, as he had before said, next year would be the jubilee of his connection with it, and he should strive to be useful to it during his tenure of office.

Wine Production *in* France. *By* A. E. Bateman, Esq., F.S.S.

[Read before the National Association for the Promotion of Social Science, at Birmingham, in September, 1884.]

Two years ago I had the honour of reading a short paper to this section* respecting the production of French wine, or rather the production of wine in France—for the two expressions are not exactly synonymous—and I now venture to bring before you a few more recent figures on the same subject.

As I showed in the former paper, the effect of the phylloxera in France had been to diminish the area under vineyards by nearly half a million hectares (1,400,000 acres), while the production of wine had fallen off even more, viz., from an annual average of 50 million hectolitres (1,100 million gallons) to 34 million hectolitres (750 million gallons). I showed further that the price of French common wines had consequently risen from 1*s.* 10*d.* a gallon in 1876, to 2*s.* 9*d.* a gallon in 1881, and that this rise in price had produced three effects, first, the largely increased import of Spanish and Italian wine for mixing with their own diminished supplies; second, the manufacture of wine from imported dried grapes or currants; and third, the manufacture of "vin de sucre"—a compound of beetroot sugar, tartaric acid, and hot water poured over the grapes from which wine had already been made. It is satisfactory to find that during the past two years "vin de sucre" has lost ground in public estimation, only 22 million gallons having been manufactured last year, as compared with twice that quantity made in 1881. The necessity to colour this compound artificially, and the quantity of unfermented sugar contained therein, render it an unsatisfactory drink at best, and the Government deserve credit for having discouraged its manufacture by strongly interdicting the use of fuchsine, a coal-tar dye which was largely coming into fashion as its colouring ingredient.

The production of raisin wine has meanwhile increased from 2,320,000 hectolitres (51 million gallons), to 2,700,000 hectolitres (60 million gallons), but this compound is certainly less noxious than "vin de sucre."

Another and more legitimate source of supply has also been opened by the extension of vineyards in Algeria, which have increased in area from 16,700 hectares in 1876, to 50,000 hectares

* See p. 113, vol. xlvi, of the Statistical Society's *Journal*.

at the present time, and in yield from one quarter of a million hectolitres of wine, to about a million hectolitres (22 million gallons).

Returning to the question of home supply, we find from the following table little change in the area under vineyards since 1881, there being now 2,096,000 hectares, compared with 2,100,000 hectares at that time.

Extent of Land under Vine Cultivation in France, and Quantity of Wine Produced.

Years.	Number of Hectares under Cultivation.	Quantity of Wine Produced.
		Hectolitres.
1871–75 (av.)	2,398,000	57,951,000
'80	2,204,000	29,677,000
'81	2,099,000	34,139,000
'82	2,135,000	30,886,000
'83	2,096,000	36,029,000

It is satisfactory to find from the official return that the progress of the phylloxera has been stayed, though at a frightful cost: acres and acres of vineyards destroyed by disease have been replanted in a more sandy soil, and in the year 1883 the various remedies of submersion under water, sulphur treatment, and the substitution of American vines, were more generally successful than in any previous year, nearly 200,000 acres of vineyards being saved to the country. All these processes are very expensive, and can hardly be undertaken with the cheaper wines unless the position of the vineyard is suitable for the process of submersion.

As regards the yield of wine there is little alteration in the past two years, the wine production having been 34,139,000 hectolitres in 1881, 30,886,000 in 1882, and 36 millions in 1883.* Consequently the exports have been maintained at much the same figure as two years ago, having been 2,590,000 hectolitres in 1881, 2,618,000 hectolitres in 1882, and 2,547,000 hectolitres in 1883. These quantities are however much below those of the last decade, when in 1875 no less than 3,730,000 hectolitres of wine were exported to foreign countries. The price as shown by the "droit "de detail," or *ad valorem* tax on retail sale, has changed hardly at all in these last years, viz., only from 2*s.* 9*d.* per gallon in 1881 to 2*s.* 10*d.* in 1883. It had increased by about 50 per cent. between 1876 and 1881, and would probably have continued to rise if it

* This year's yield of wine is at present quite problematical, and the various estimates show a distinct tendency to support the interests of those who make them. The quality however appears likely to be excellent, although it may not be a "bumper" vintage.

had not been for the cause I alluded to above, viz., the enormous imports of wine from Spain and Italy. I showed in my previous paper that while up to 1875 France imported a mere quarter of a million hectolitres, the imports of 1881 had reached 7,840,000 hectolitres, of which Spain and Italy supplied 5,700,000 hectolitres and 1,550,000 hectolitres respectively. Since 1881 France has renewed her treaties of commerce with most European countries, and, strange to say, among the new conventional rates of duty—many of them increased rates—is a lower duty of 2 frs. a hectolitre (1*d.* a gallon) on the import of wine under 16 degrees Gay Lussac (27·8 degrees Sikes), being about half the rate previously charged. This alteration has materially encouraged the importation of Spanish wine, or what is, according to the French wine growers, wine fortified in Spain with German spirit—while the French exchequer has suffered from the lower duty, the customs receipts from wine amounting to only 18 million francs in 1883 compared with 27½ millions in 1881, although nearly 9 million hectolitres of wine entered the country in the past year. The wine growing interest further allege that it is the German maker of grain, and especially of potato spirit, who is reaping the benefit of this trade; and it is certainly curious to notice the coincident increase in the German spirit exports to Spain and in the Spanish wine exports to France, thus:—

	German Spirits Imported into Spain.	Spanish Wine Imported into France.
	Hectolitres.	Hectolitres.
1878.....	55,000	1,300,000
'79.....	154,000	2,300,000
'80.....	289,000	5,000,000
'81.....	358,000	5,700,000
'82.....	483,000	6,400,000

or about five times as large a trade in wine and nine times as large in spirits in 1882 as in 1878.

The French were formerly able to produce grape spirit enough to fortify their own wine, but as shown in the following table this production is now quite insignificant since the advent of the phylloxera; and potatoes, syrup, and beetroot now furnish 98 per cent. of the alcohol made in France.

Quantity of Alcohol Produced in France from 1871 *to* 1883.

Years.	Alcohol derived from the Distillation of					Total.
	Farinaceous Substances and Potatoes.	Molasses, Native, Foreign, and Colonial.	Beetroot and Extract of Beetroot.	Wine, Cider, Husks of Grapes, Lees, and Fruits.	Various Substances.	
	Hectol.	Hectol.	Hectol.	Hectol.	Hectol.	Hectol.
1871–75	109,000	644,000	349,000	507,000	50,000	1,659,000
'76–80	220,966	681,831	328,505	264,131	5,411	1,500,844
'81.....	506,273	685,646	563,240	61,839	4,289	1,821,287
'82.....	447,066	703,989	556,056	55,397	4,058	1,766,566
'83.....	561,932	750,637	629,998	61,124	7,325	2,011,016

In Germany the sugar factory, the distillery, and the keeping of live stock are all combined in one establishment, and the refuse of the two first named industries support the last to a great extent. Germany has indeed become a very formidable rival to France in spirit distilling, and her products are sent all over the world.

The quantity exported in 1875 amounted to 5 million gallons, and in 1882 to 22 million gallons, valued at 2*s.* a gallon, and often very dear at the price. Besides the amount used in fortifying Spanish and other wine, no small quantity of German spirit goes straight into consumption among the unwary heathen; thus from Hamburg alone 6 million gallons were sent to Western Africa in 1882, to the injury of health and morals there. It would seem better to leave the natives in their heathenish beliefs, especially if they will worship only idols that are made at Birmingham, than that civilisation should bring in its wake such body and soul destroying influences as raw potato spirit.

But to return to the French wine question, the competition of Hispano-German beverages has led to several proposals for assisting the wine interest. The first to which I referred in my previous paper was to allow wines to be fortified by the grower (up to 15 degrees [26 degrees Sikes],) by adding spirit, on paying about 9*d.* a gallon on the added spirit instead of the ordinary spirit excise of 7*s.* a gallon. This proposal has been before the Chambers for three years, but though it was calculated to win the support of the beetroot spirit makers, as well as of the wine growers, it has made little way, and a counter proposal to tax wines of over 12 degrees Gay Lussac (21 degrees Sikes) at spirit rates for the excess over 12 per cent. has been received with greater favour, as being more likely to help the wine industry by taxing the German spirit in the Spanish wine, and it would also obtain more revenue for the Government, which is greatly required. Something has already been done for wine and sugar interests by the Act of the past session, which besides providing for the new sugar bounties reduces the refined

sugar excise of 50 frs. per 100 kilograms to 20 frs. when it is for use in wine making. The consumer is put forward as being interested in this and other concessions, for it is stated that in certain soils, and in particularly ungenial seasons, the wine requires either to have sugar added for fermentation, or itself to be fortified with added spirit. One of M. Pasteur's recent discoveries, that wine in unfavourable seasons which contains immature germs can be cured by heating to 140° Fahrenheit, will doubtless prove of great value, and should reduce the necessity for fortification, and improve the quality of wines. That the consumer, in Paris at least, has much to put up with in bad wine appears from the municipal laboratory report.

Taking the month of June last 552 specimens of wine were officially tested; only 113 were good; 39 were bitter or acid, 53 had an unpleasant taste, 129 were plastered—this is a question of degree and argument, it being maintained by many authorities that a certain quantity of plaster is good and wholesome—132 had water added—this again will be thought an improvement by our temperance friends, but at the same time it is an adulteration—and lastly 86 had various mixtures added to them.

The importance of the liquor traffic in Paris may be judged from the fact that more than 2½ millions sterling is annually raised there by octroi duties on alcoholic drinks alone, and the consumption per head of population is as much as 45 gallons of wine, a gallon and a half of spirits, and 3 gallons of beer.

To sum up the state of the wine industry in France, the phylloxera has been arrested, but at a cost which has pinched the vine growers very severely. By an accidental lowering of the customs duty on wine the competition of German spirit is being as much felt by the wine interest in France as are the German sugar bounties by the sugar interest, and in both cases the State is called upon to interfere.

If such interference in the wine question, assisted by M. Pasteur's discovery for curing bad wine, encourages the manufacture of good sound drink of low alcoholic strength, and discourages fortification and the import of loaded Spanish wine, well and good; but State interference is always dangerous.

On the Comparative Efficiency *and* Earnings *of* Labour *at* Home *and* Abroad. *By* J. S. Jeans, Esq.

[Read before the Statistical Society, 16th December, 1884. The President, Sir Rawson W. Rawson, K.C.M.G., C.B., in the Chair.]

CONTENTS:

	PAGE
I.—Introduction	614
II.—Comparative Efficiency of English and Foreign Labour	615
III.—Earnings of the Working Population of Different Countries	624
IV.—Recent Increase of Wages Earned in Different Countries	632
V.—Female Labour	638
VI.—Juvenile Labour	639
VII.—The Industrial Classes	639
VIII.—Unproductive Population	640
IX.—Distribution of Population according to Occupations in Different Countries	640
X.—Comparative Cost of Living in Different Countries	641
XI.—Recapitulation	643
Appendix.	
Tables I to XII	646

I.—*Introduction.*

It will probably surprise others, as it has greatly surprised myself, to find that the present is the first attempt that has been made to treat this subject before our Society from the point of view indicated by the title of the paper. And yet it need not, after all, excite our wonder that the treatment of so vast and complicated a question by a purely statistical process has not hitherto been undertaken. There is, in truth, a very considerable, and in regard to not a few points, insuperable, difficulty in establishing comparisons between one country and another, so far as labour questions are concerned. Of this difficulty I have been most fully convinced, and my conviction as to the extremely uncertain and incomplete *data* on which I should largely have to depend has been deepened in exact proportion to the extent of my investigations. But there are, nevertheless, many valuable official facts, the collection and collation of which are, in my opinion, calculated to throw much light upon the comparative condition of the labouring classes at home and abroad, and I have entered upon this work with a strong feeling that if, through this Society, such knowledge could be diffused in even the smallest degree, its accomplishment could scarcely fail to be of some little use, at a time when we are hearing so much of danger from foreign competition, of trade depression at home and abroad, of the

socialistic doctrine that the rich are becoming richer and the poor poorer—in spite of our undoubted advances in wealth and civilisation—and of demands for Select Committees and Royal Commissions to consider causes and to suggest remedies. Nor will it be without some use to future workers in the same field, if I point out, as I proceed, where the difficulties in the way of making this investigation more complete chiefly lie, and what is their character and extent.

II.—*Comparative Efficiency of English and Foreign Labour.*

It will probably in this place be an uncontested proposition that British labour, all other things being equal, is the best and cheapest in the world. Much as our working classes have been blamed for their undoubted shortcomings, and greatly though in not a few cases their action has tended to hamper and shackle the course of industry, it has not yet been found expedient to import the lower-paid labour of other countries on a scale of any importance, and we seem to be as far as ever from an invasion of "Chinee *cheap* labour." The explanation is not far to seek. Neither the shorter hours of labour, which have now given the English working man much more favourable terms in reference to the length of his day's work than are enjoyed by most other countries, nor the repeated strikes for higher wages, ill-judged and most lamentable in their results though many of them have been, have yet effected the ruin of English trade and industry that has often been predicted by pessimist and shortsighted observers. It has, indeed, been reserved for the English workman to prove that neither shorter hours nor higher wages necessarily mean relatively dearer labour, and that his superior energy, endurance, and skill have so far enabled him both to enjoy these advantages and fully hold his own.

Let us clear the way by remarking, at the outset, that there is no subject related to the labour question that is so difficult of just appreciation as the comparative efficiency of the working classes in different countries. The investigation is complicated by many dissimilar conditions and widely divergent practices and modes of working, by the proportions of women and children employed, by the character of the machinery, by the fineness or otherwise of the products obtained, by the relative dryness or humidity of the climate, and by many other factors which cannot readily be assessed. It is comparatively an easy matter to establish the rates of wages paid in different industries, and the purchasing power of money in reference thereto. The hours of labour in different countries are equally easy of estimation; nor is there in some cases great difficulty in determining the nationality of the work-

man who will turn out the greatest quantity of work in a given time. But even if the latter fact were always easily capable of ascertainment, which it is not, there is the scarcely less important determinant of quality to be taken into account, and much less easy to appraise. Nor should it be forgotten that the comparative efficiency of the machinery at the disposal of the workman, and the variety and perfection of the labour-saving appliances available, have much to do with determining the value of the operative's labour. To borrow an example from mining experience, in certain mines drilling machines are employed, by means of which a workman is enabled to produce three, four, or even six times the average quantity he could turn out unaided by these appliances; but then such machines can only be employed in certain mines, where the ore is of a certain thickness, inclination, and physical structure.

With these reservations, let us now examine the question a little more in detail. This may be done with sufficiently approximate accuracy for all practical purposes by comparing the official statistics of different industries in the chief nations of the world.

The first important industry that appears to invite a comparison of results is that of cotton. This occupation is followed more or less in all modern countries, and, considered as a whole, employs a larger number of members of the human family than any other except agriculture. The most obvious method of ascertaining how far the cotton operatives of one country are superior in efficiency to those of another would be that of dividing the total number of hands employed into the aggregate production of cotton. Another process is that of dividing the number of hands employed into the total number of spindles in each country. The first method is open to the twofold objection that the exact production of cotton in each country is not known, and that, even if it were otherwise, the exact quantity of each quality or description of cotton would require to be known before a really reliable comparison could be made. The second method of computation is also defective, although perhaps in a less degree, by reason of the fact that a certain unascertained and unascertainable proportion of spindles are unemployed, and as this proportion may, and probably will, be much greater in one country than in another at any given time, any comparative results founded on such a basis must suffer accordingly.

A recent writer* gives the number of spindles to each operative in the cotton industry as under:—

* Mulhall's "Progress of the World."

Great Britain	83
United States	66
Germany	46
France	24
Russia	20
Austria	20
India	20
Average	54

These figures are probably as near the truth as any that we can command. Taking them for what they are worth, they show that Great Britain is just 54 per cent. better than the average of the seven countries compared; but as Great Britain, having an enormous preponderance over all other countries in respect to the *extent* of her means of production, is likely to have a larger proportion of those means unemployed at any one time, it is probable that the actual difference in her favour is considerably less than that figure. Even so, however, there can be no doubt that English cotton operatives, judged from this point of view, are superior to those of other countries in average productiveness.

But the question whether this relative superiority is being increased or diminished is scarcely less important than the facts we have just been considering. Let us see, then, how the figures stand in this regard.

The number of hands and spinning spindles employed in the cotton trade of the United Kingdom, and the average number of spindles per *employé*, here follow, as under:—

Year.	Number of Hands.	Number of Spinning Spindles.*	Number of Spindles to each Operative.
1851	330,924	20,977,017	63
'61	451,369	30,387,467	67
'71	449,987	34,695,221	77
'74	479,515	37,515,772	79
'78	482,903	39,527,920	82

* In addition to the number of spinning spindles here given, there are several million doubling spindles, which numbered exactly 4,678,770 in 1878.

With regard to power looms the numbers were:—

Year.	Number of Hands.	Number of Looms.	Number of Looms per Operative.
1861	166,209	399,992	2·4
'71	165,341	440,676	2·6
'75	163,332	463,118	2·8

Let us now compare these figures with corresponding figures for the United States, so far as they are at command.

The following is a tabular view of the cotton industry of the United States, 1860-80:—

TABLE I.—*Statement showing the Position of the Cotton Industry of the United States in each of the Years* 1860 *and* 1880.

	Year 1860.	Year 1880.	Amount of Increase.
Number of works or factories	1,091	756	—
„ spindles	5,235,000	10,653,000	5,418,000
„ looms	126,000	225,000	99,000
„ *employés*	122,000	172,000	50,000
Capital invested (dols.)	98,585,000	208,280,000	109,695,000
Amount paid in wages „	23,940,000	42,040,000	18,100,000
Cotton consumed (lbs.)	422,704,000	750,343,000	327,639,000
Value of products (dols.)	115,681,000	192,090,000	76,409,000

Showing that in the United States, between 1860 and 1880, the number of spindles *per operative employed* increased from 42·8 to 61·9; the number of looms from 1·03 to 1·3; the cotton consumed from 3,448 lbs. to 4,362 lbs.; and the value of the products from 948 dollars to 1,116 dollars. In the United Kingdom, however, between 1861 and 1878, the number of spindles per operative employed increased from 67 to 82, and the number of looms from 2·4 to 2·8. Put in another way, the product of labour as regards the number of spindles employed was roughly 32 per cent. better in the United Kingdom than in the United States, while as regards the working of looms it showed a superiority to the extent of 80 per cent. That the number of spindles per operative employed increased by 19·1 per cent. in the United States, while it only increased by 15 per cent. in the United Kingdom, is not, I think, so much an evidence of absolutely superior progress on the part of the former country as it is a proof that there was great inferiority existing at the earlier period, which required to be largely made up before a proper comparison could be made. With regard to loom-working, it will be observed that alike in amount and per-centage of improvement, we are better than our friends on the other side of the Atlantic.* I do not think it necessary to carry this comparison beyond the United States, which is the only country that approaches our own in the conditions referred to.

Next to cotton, the greatest of our textile industries is that of

* This appears to be borne out by the fact that between 1860 and 1879, the export of cotton manufactures from the United States only increased by half-a-million dollars (from 11 million to 11½ million dollars), whereas in England the increase of exports of cotton in the same time was over 60 million dollars.

wool and worsted. In this industry, however, the comparison is not so easy as in that of cotton, on account of the greater variety of appliances used and of products obtained. What with carding machines, broad and narrow looms, hand looms, Brussels power looms, ingrain power looms, and knitting and sewing machines, it is difficult to form a reliable computation of the qualities of the workers apart from their mechanical aids. But basing an estimate on the number of spindles alone, the results obtained for three of the leading countries are as under :—

Country.	Number of Operatives.	Number of Spindles.	Number of Spindles to each Worker.
United Kingdom	265,269	6,408,695	24
France	110,904	3,037,837	28
United States	86,504	1,756,746	20

The figures show, as far as they go, that France has some superiority over both our own country and the United States, and when we divide the total number of workers into the total number of looms of all kinds, a corroborative result comes out, viz. :—

	Number of Operatives.	Number of Looms.	Number of Looms to each Worker.
United Kingdom	265,269	143,337	0·5
France	110,904	78,676	0·7
United States	86,504	35,625	0·4

It will be obvious that if the proportion of spindles and looms not at work in the United Kingdom was greater than in either of the other countries, the result would be affected to the extent of such difference.

With reference to the silk industry, the returns of the different countries as to the number of hands employed and the number of spindles and looms in existence, are as exact and as full as any returns of the kind can reasonably be expected to be. But the conditions of the industry, in reference to the methods of working, the machinery employed, and the products turned out, vary so much, as between one country and another, that a fair estimation of the comparative efficiency of the workers is rendered next to impossible. For example, in the United Kingdom, according to the latest returns, there were 24 spindles and 0·3 power looms per person employed in the silk manufacture, whereas in France there were 4 spindles and $1\frac{1}{2}$ looms per person employed. Again, the returns for this country do not show that any hand looms were

employed, whereas in France, out of 74,000 looms, 61,000 were hand looms. It may here be noted that the silk trade is declining in England. It employed 48,000 hands in 1870, and only about 41,000 in 1878.

Let us now apply the figures that the official returns of mineral productions issued by the leading countries of the world place at our command, to the consideration of the comparative results of labour in the only two departments of mining that admit of such a comparison in any degree whatever, namely, coal and ironstone.

With respect to the latter, I have compiled a table from the Government returns of our own and other countries, showing, by a division of the total number of hands employed into the total production of iron ore, the average annual output per person employed in different countries, which I herewith present:—

TABLE II.—*Total Number of Miners Employed in the Ironstone Mines of different Countries, with the Total Production of Iron Ore, and the Average Annual Output per Miner in each Country.*

	Year.	Number of Miners in Iron Mines.	Total Production of Iron Ore.	Average Annual Output per Miner.
			Tons.	Tons.
England	1881	26,110	14,591,000	559
Scotland	'81	10,473	2,595,000	248
Ireland	'81	504	260,000	516
United Kingdom	1881	37,087	17,446,000	470
Germany	1882	38,783	8,263,000	213
United States	'80	31,412	7,162,000	228
France	'81	8,623	3,032,000	352
Austria	'80	4,414	628,000	142
Luxembourg.....	'81	3,423	2,161,000	631
Spain.....	'82	14,795	3,565,000	240

On the face of them, the foregoing figures prove that Luxembourg has the best individual result to show among the iron producing countries of the world, followed, at a considerable distance, by England, and at a much greater distance by France, Spain, and the United States. But to understand aright the foregoing table, it would almost be necessary to describe all the conditions under which iron ore is found and worked in the different countries enumerated. No two countries are quite alike in the character of their iron ore resources. In some countries the ore is found in thin and uncertain beds; in others in very thick and regularly defined horizontal strata; in others again, in veins or pockets which are liable every now and again to be disturbed by

throws or faults, and thus become lost, though admitting of a very large average production while they are at their best. Some mines, moreover, are worked by a shaft, others by a gallery or drift and others, again, like those of Bilbao and the Styrian Ezberg, by open workings. All these considerations, as well as the comparative hardness or softness of the ore, and the character of the machinery employed, should be taken into account in attempting to form any estimate of the comparative efficiency of the labour employed on the basis of the average output.

The difficulties and discrepancies to which I have called attention in discussing the conditions under which iron ores are obtained apply, *mutatis mutandis*, to the working of coal, so that there would be a very great liability to error in any attempt to judge of the comparative efficiency of the labour employed with only the average output per man as our basis of computation. The reason why the coal of one district is relatively cheaper or dearer than that of others is not alone because of variations in the rates of wages, but also because in some districts the coal is found under circumstances which render a large individual output a physical impossibility; and in proof of this it is only necessary to name such extreme variations as are represented in our own country by the so-called 10-yard coal of South Staffordshire on the one hand, and the 2-foot steam coal of Northumberland on the other. With these reservations, however, the following table, which I have compiled in every instance from the official statistics of the countries dealt with, may be said to have both a positive and a negative importance as showing:—

(1.) The average output of coal per person employed in each of the great industrial nations of the world.

(2.) The extent to which each separate nation is at a disadvantage or otherwise compared with all the others in respect of its resources for the production of coal, as exhibited by the average output per miner employed.

TABLE III.—*Total Number of Persons Employed in the Production of Coal in Different Countries, with Aggregate Quantities Produced, and Average Annual Output per Person Employed.*

Country.	Number of Persons Employed in and about Coal Mines.	Aggregate Output of Coal.	Average Annual Output per Person Employed.
		Tons.	Tons.
England and Wales	381,763	133,233,000	349
Scotland	53,741	20,823,000	387
Ireland	844	127,585	151
United Kingdom	436,352	154,184,000	353

TABLE III.—*Persons Employed in the Production of Coal—Contd.*

Country.	Number of Persons Employed in and about Coal Mines.	Aggregate Output of Coal.	Average Annual Output per Person Employed.
		Tons.	Tons.
United States ..... bituminous	100,116	37,400,000	374
United States ..... anthracite	70,748	25,550,000	361
Germany*	186,335	48,688,000	261
Austria ..... brown coal	35,990	5,378,604	149
Austria	27,165	7,905,000	291
Italy	—	—	—
France	106,410	19,765,983	186
Belgium (Liége)	23,456	3,823,000	163
India	3,763	—	—
Nova Scotia	3,455	1,124,000	325
Victoria	—	—	—
New South Wales	4,857	1,485,000	306

* In Germany, and to a large extent also in France, a considerable staff is employed about the mines in washing the coal, which does not apply, at any rate not to anything like the same extent, in other countries. Were these workmen left out of the account, the average output would, of course, be higher.

It is quite clear from these figures that the United States leads the world with regard to the average productiveness of its coal mines, but Great Britain makes such a good second that it has little need to fear or be ashamed, and especially when its position is contrasted with the average of the other countries enumerated.

I have tried to establish a comparison of the work done in the shipbuilding yards of the United States and the United Kingdom respectively, based upon the amount of new tonnage turned out, and relatively to the number of men employed; but I have found the materials available for such a purpose so unreliable and wanting in correspondence, that I have been compelled to abandon the attempt. As an example, the total tonnage of the new vessels built in the United States is returned in the Census report for 1880 at 498,878 tons, whereas in the "Tables showing the Progress "of British Merchant Shipping," issued by our Board of Trade, the figures are stated at 157,000 tons. Again, the number of men employed in the shipbuilding trade of the United Kingdom is returned in our Census reports for 1881 at 72,000, for an aggregate production of 608,000 tons of shipping, whereas the total number of hands employed in the United States' shipbuilding trade to produce 498,000 tons of shipping is only returned at 21,345. Obviously, in some important particulars, these figures do not mean one and the same thing.

It would be interesting if this comparison of the results of

labour in different occupations could be extended to agriculture, but the difficulties in the way of such a comparison are too serious to allow of its being usefully made. Not only would the total operative population, and each class thereof in each country have to be considered with reference to the area under cultivation, and the extent and value of the crops produced, but the character of the soil; the extent to which implements take the place of hand labour, and the comparative efficiency of those implements; the relative proportions of cereals to other crops and to cattle-breeding; the variableness of the climate, and many other factors difficult or impossible of ascertainment must come into the account before it could be deemed fit for audit.

With reference to the quantity of work capable of being produced by workmen of different nationalities under conditions as far as possible similar and parallel in every respect, the best information that I have found is that communicated to the Institution of Civil Engineers a few months ago by Mr. Charles O. Budge, as the results of his own experience in the execution of engineering contracts in different countries.

In these tables the labour dealt with was:—

(1.) Earthwork.

(2.) Ordinary bricklaying.

(3.) Hammer-squared rubble (dressing and setting only).

(4.) Painting on new work.

The results are herewith tabulated:—

I.—Earthwork.

Side cutting excavated and removed to embankment; the nature of the soil, the lift, and the lead, being approximately the same in each case.

	Amount of Work Done in a Given Time, Average English Quantity being Unity.	Cost of Unit of Work (Labour only), English Average being Unity.
Englishmen	1·00	1·00
Frenchman, Belgians, Germans	0·75 to 0·90	0·90 to 1·00
Southern Europeans	0·60 „ 0·85	0·60 „ 0·80
Hottentot half-breeds	0·50 „ 0·80	0·90 „ 1·25
Kaffirs, Zulus, &c.	0·40 „ 0·70	0·80 „ 1·00
Stronger Indian races	0·40 „ 0·70	0·25 „ 0·60
Inferior „	0·25 „ 0·40	0·20 „ 0·50

II.—IN ORDINARY BRICKLAYING.

	The Amount of Work Done in a Given Time, Average English Quantity being Unity.	Cost of Unit of Work (Skilled Labour only), English Average being Unity.
Englishmen	1·00	1·00
Frenchmen, Germans, Dutchmen, &c.	0·80 to 1·00	0·80 to 1·00
Natives of India (best class)	0·40 „ 0·50	0·50 „ 0·65
„ (inferior)	0·30 „ 0·40	0·43 „ 0·60

III.—HAMMER SQUARED RUBBLE (DRESSING AND SETTING ONLY).

Englishmen	1·00	1·00
Frenchmen, Germans, &c.	0·75 to 0·90	0·90 to 1·00
Southern Europeans	0·55 „ 0·70	0·70 „ 0·80
Natives of India (best class)	0·40 „ 0·60	0·65 „ 0·80
„ (inferior)	0·33 „ 0·50	0·60 „ 0·80

IV.—PAINTING ON NEW WORK.

Englishmen	1·00	1·00
Natives of India	0·40 to 0·60	0·60 to 0·80

It is not necessary to offer any comments on the foregoing figures, which show clearly the comparative capacity of workmen in different countries for doing work that is so greatly dependent on strength and energy. With reference to the cost of such work, Mr. Budge disputes the late Mr. Brassey's conclusion that difference of wages does not materially affect the price of work, contending that if Mr. Brassey "meant that wages generally "adjust themselves to the ability of the workmen his statement was "certainly open to question," and setting forth, with reference to "that class of work in which manual labour is the chief ingredient," that the result arrived at is, "in general this, that the lower the "wage, the lower is the price of the work, though of course not in "the same proportion."

III.—*Earnings of the Working Classes in Different Countries.*

In any attempt to estimate the average and aggregate earnings of the working classes in different countries, we are necessarily undertaking a work which no amount of investigation and care can render otherwise than only approximately near the truth. It is, to begin with, extremely difficult to obtain statistics of wages that will apply to precisely the same kind and character of work. But even if this were otherwise, it is practically impossible to arrive at a correct average for each class of workers in any particular

country, owing to the great variations in the wages paid in the different districts or provinces of that country. In our own land, there is often found a difference of 30 to 50 per cent. in the wages paid in the same occupation, as between one district and another. In America, the wages paid in the Eastern and Northern take a much higher range than those paid in the Western and Southern States. In France, as will be found on referring to a table printed in the appendix, the average wages paid in a certain number of selected leading occupations is in many cases more than double in Paris what it is in the provinces. In Germany, again, the wages paid in the provinces of Rhineland and Westphalia, where industries are carried on in competition with agriculture, are much higher, on the average, than in the South, where an opposite condition of things is the rule. There are, moreover, variations, more or less considerable in amount, between the wages paid in different districts of the same county or province, dependent mainly on local conditions.

Having disposed of these rather obvious considerations, we are called upon to face scarcely less formidable difficulties in regard to the various and often conflicting sources whence returns of the earnings of the working classes are to be obtained. In this matter England is certainly not in advance of some other nations. We are, indeed, very far from being as forward as we should be relatively to our unique position as a manufacturing country. In America there are bureaux of labour established in certain States, whose business it is to collect and collate the rates of wages paid in different occupations at more or less frequent intervals; and I cannot, in passing, refrain from paying a well-merited compliment to the Massachusetts Bureau, which annually supplies the Government and people of that State with a valuable collection of data as to earnings in different industries, and the relative cost of living both at home and abroad, which our own Government would do well to imitate.* In France, again, it is the function of the Minister of Commerce to collect annually, and publish in the "Annuaire Statistique," returns showing the average rates of wages paid both in Paris and in the different provinces or departments. In Germany there exist several organisations whose business it is, among other things, to collect and publish returns of wages, which are usually got out with great care and fulness, although their value is impaired by the limited area, geographical or industrial, over which they extend. In the United Kingdom the "Miscellaneous Statistics" issued at three-yearly intervals† by the Board of Trade, usually publishes

* I am glad to find that in this view I am supported by Sir Thomas Brassey, who in his "Work and Wages" enunciates practically the same opinion.

† The latest issue gives wages returns for 1880 only.

statements showing the rates of wages paid in the chief industries followed in different districts, but in the latest issue of that work, although the returns are fuller than usual, they only apply to about forty trades or industries, which is a very small proportion of the whole number.

In endeavouring to compare the average rates of wages in different countries, it is obviously of the first importance to take care that the occupations selected for comparison are such as are liable to the least possible amount of variation in the conditions under which they are carried on. Such are agricultural labour, the building trades, the textile industries, and, in a less degree, the industries of mining and metallurgy.

Keeping these considerations before me, I have compiled a table which is intended to show the average rates of wages paid in the four leading industrial countries of the world in 1880. There is no special reason why that year should be selected, except that no official returns of the wages paid in certain occupations are available for a later period in the case of both France and the United Kingdom. It may also be remarked of 1880 that it was a good year to adopt as a standard, trade generally being then in a fairly active, although by no means inflated condition, throughout the world.

The figures which have been compiled for the table (Appendix I*) show that for fifteen of the leading occupations followed in each country, and embracing in the United Kingdom $4\frac{1}{4}$ million male operatives out of a total of 6 millions engaged in agriculture and industry, being 70 per cent. of the whole, and in the United States nearly 5 millions out of a total of $7\frac{1}{6}$ millions similarly engaged, or 69 per cent. of the whole working population, the average weekly wages were as under:—†

	s.	*d.*
United States (Massachusetts)	55	2
„ Kingdom (Lancashire)	30	5
Germany (Westphalia)	21	8
France	18	10

giving to the United States a position superior to that of Great Britain by 84 per cent., and better than that of Germany and France by 162 per cent. and 205 per cent. respectively; while Great Britain comes out as 42 per cent. better than Germany, and 58 per cent. superior to France.

* The rates of wages given in this table are obtained:—1. *For the United Kingdom*—from Mr. Lord's tables for 1880, issued by the Manchester Chamber of Commerce. 2. *For the United States*—from the reports of the Massachusetts Bureau of Statistics. 3. *For Germany*—from returns obtained direct from Westphalian works. 4. *For France*—from the Annuaire Statistique.

† It will be understood that the figures in every case apply to adult male labour.

It is not without interest to compare these figures with those that relate to the wages paid in our Colonial Empire. I have accordingly compiled from the official statistics of wages issued by the various Colonial Governments a table (Appendix II) which shows the average wages paid in each of the four chief Australasian Colonies at about the same period as that to which the figures already quoted apply. This statement shows that in fifteen leading occupations, approximately similar in kind to those given in the preceding table, the average wages paid was 53*s.* 7*d.* per week, being 3·6 per cent. under the average of Massachusetts, but 77 per cent. above that of the United Kingdom, 157 per cent. above that of Germany, and 194 per cent. above that of France.

In Canada, according to statistics issued by the Government, the average rate of wages paid in the building trades in 1882 was about 46*s.* per week, being about 7*s.* 7*d.* per week under the average of the Australasian Colonies, but still considerably higher than the average of the same trades in European countries.

To extend the comparison to other countries would greatly amplify this already lengthy paper, and throw very little useful light upon the English labour question, which is mainly affected, so far as it is affected at all by external influences, by the rates of wages paid in the countries now dealt with.

Generally, it may be remarked that, in the East and South of Europe, wages usually take a much lower range, Italy, Austria, and Hungary being under the averages of both France and Germany, and Russia and Turkey showing a lower standard still.

It is the custom of some persons to speak of Russia as one of the countries of the future, and so far as low wages can assist a country in cheap production, it certainly does enjoy very great advantages. I have obtained a statement of the wages paid in eleven leading industries in St. Petersburg in 1880 (Appendix III), which shows a maximum wage of 2*s.* 5*d.*, and a minimum of 10*d.* per day for labour that may generally be described as skilled.*

I now propose to institute a fuller comparison of the wages

* With respect to Russian workmen, an esteemed correspondent in St. Petersburg writes to me as follows:—

"The pay which workmen receive in St. Petersburg would always allow him "something for a rainy day, if it were not for the habit they have of spending all "the money they earn in vodka. There is, however, much to be excused on this "ground, as the Russian workman has no cheap theatres, Sunday schools, or "libraries, and as most of them cannot read, books are useless to them. In "Petersburg most of the working men come to look for employment during the "winter. In spring again most of them return to their own villages, as in this "country every peasant has a piece of land which he is obliged to cultivate. "Indeed, throughout Russia, only workmen receiving the highest rate of pay can "be regarded as permanent *employés*, as only such can arrange to send a part of "their earnings to their native villages to pay their share of the taxes and hire "labour (if that should be needed) to cultivate their few acres of land."

paid in the two leading industrial nations of the world—the United Kingdom and the United States—with the view of endeavouring to ascertain both the average and the aggregate annual earnings of the working population in each country.

The materials for such a comparison exist in the United States in much greater abundance than in our own country. The aggregate wages paid in each industry are collected every ten years for the United States Census Reports, which, I may be allowed to remark, by the way, are got up with a fulness and care that challenge favourable comparison with those of the English Census Commissioners.

From the report of the Tenth Census of the United States I have compiled two statements—the first (Table IVA) showing the average earnings in each principal class of occupations in the Census year 1880, and the second (Appendix IV) showing the aggregate and average earnings in each of the principal manufacturing industries of that country in the same year.

With reference to the table forming Appendix IV it should be remarked that the wage-earners, the aggregate and average of whose annual earnings are there tabulated, represent a total of 2,322,980, or 60 per cent. of the total number engaged in manufacturing and mechanical industries in the United States. Of that number, however, only 396,280, or 17 per cent., are females and young children, and if we eliminate the tailoring and cotton industries from the group, the proportion of females and young children would be reduced to 193,000, or only a little over 8 per cent. of the whole. It will be observed also, as might be expected, that the average wages paid generally take the lowest range in those industries that embrace the largest number of females, the only notable exceptions to this rule being sawyers and brick and tile makers. The highest average wages paid in the United States are received by shipbuilders, among whom there are only seven operatives that are not males above 16 years; and the next highest wages appear to be paid to printers, who, however, number, in a total of 58,280, no fewer than 12,400 women and young children. It will further be observed that while the average wages received per *employé* over the Census year ranged from 42*l.* 5*s.* 10*d.* in the case of brick and tile makers, to 124*l.* 3*s.* 4*d.* in the case of shipbuilders, the average over the whole twenty-five selected occupations was about 77*l.* 10*s.* per annum, which is just 35*l.* 9*s.* above the figure which is computed (Appendix V) as the average annual earnings of the working classes in the United Kingdom, and 5*l.* 10*s.* above the average of *all persons of both sexes* employed in the manufacturing industry of the United States as set forth in Table IVA, presented herewith—

TABLE IVa.—*Total Number of Hands Employed in Different Occupations in the United States, with Total Amount Paid in Wages, and Average Annual Earnings per Person Employed.*

Occupation.	Total Number of Persons Engaged. [000's omitted.]	Total Amount Paid in Wages in Census Year. [000's omitted.]	Average Annual Earnings per Person Engaged.
		$	$ £
Agricultural labourers	3,332,	833,000,	250 = 52
Domestic and personal service	3,386,	1,015,800,	300 = 63
Manufacturing industry	2,732,	947,953,	347 = 72
Mining (non-precious metals)	220,	71,992,	327 = 68
Railways	418,	195,350,	467 = 97
Steamships	56,	25,982,	464 = 97
Totals and averages	10,144,	3,090,077,	305 = 64

The total earnings of the 10 millions of so-called wage-receiving classes in the United States would appear from these figures to be about 643,315,000*l.*, which is 225,281,000*l.* more than the amount estimated by Professor Levi as the earnings of about 11 millions of wage-earners in the United Kingdom thirteen years before.* It is an obvious comment on these figures that if the same proportion of the whole working population that is employed in the manufacturing industry of the United Kingdom was so employed in the United States—23 per cent. instead of only 7·6 per cent.—both the average and the aggregate wages paid in the latter country would be much higher.

In framing this table, the earnings of the population employed as agricultural labourers, &c., have been estimated from returns of the wages paid in different States, as set forth in consular and other reports. The wages earned by those engaged in domestic and personal service have been estimated in the same manner, the cost of board being reckoned as part of the wages in the case of domestic servants. With reference to the other four classes of occupations in the table, the total amount of wages paid has been ascertained by the enumerators, and is specifically set forth in the Census Report.†

It will be noted, moreover, that the persons employed in professional and commercial occupations are eliminated, as are also all farmers and planters owning their own land, or tilling it as responsible tenants. It has not been possible to separate the owners from the operatives engaged in manufacturing and

* The above table does not, however, embrace any who are engaged in what is described as commerce—including an army of nearly 400,000 clerks—numbering altogether 1,336,000, and many of whom were included in Professor Levi's figures.

† In compiling the Census of 1870, the United States Government collected statistics of the wages actually paid in agricultural work, but no such figures appear in the Census Report for 1880—presumably by reason of the difficulty experienced in procuring them.

mechanical industries, so that, in dividing the numbers engaged into the gross amount of wages paid, a certain unascertained proportion of employing and non-wage-receiving persons has necessarily been included. The same remark will apply to those engaged in mining and transportation; but while the average of wages earned per individual would take a higher range if employers, whose earnings are otherwise accounted for,* could be eliminated, this circumstance does not disturb the aggregate amount paid *as wages*.

With the average wages paid in the United States as one factor, and the total numbers employed in the different classes of occupations in the United Kingdom as another, I have constructed the following tabular statement:—

TABLE Va.—*Total Amount of Wages that would be Received by the Wage-Earning Classes of the United Kingdom, in* 1881, *on the Basis of the Average Wages ascertained to have been Paid to the same Classes in the United States during the Census Year* 1880.†

Class of Occupation.	Numbers Employed in United Kingdom in 1881.	Average Wages Paid in United States per Employé, in 1880.	Amount of Wages that would be Paid to numbers Engaged in United Kingdom on United States Averages.
		£	£
Agricultural labourers, &c.	1,443,628	52	75,068,656
Domestic and personal services..	2,406,536	63	151,611,768
Manufacturing and mechanical industry	7,463,016	72	537,337,152
Transportation	789,398	97	76,571,606
Miners.....	511,698	68	34,795,464
Totals	12,614,276	Average 70	876,144,646

This statement brings out several important points of comparison, the more obvious being:—

1. That in the five classes of occupations tabulated, there were 2,470,000 more wage-earners in the United Kingdom in 1881 than in the United States in 1880, notwithstanding that the latter country had an aggregate population exceeding that of our own by nearly 13 millions.

2. That this excess would give the wage-earning population of the United Kingdom over 233 millions more as earnings than the

* When I say that "the earnings of employers are otherwise accounted for," I mean that it is possible approximately to estimate them from the Census Reports, by subtracting the wages paid and the value of the raw materials used in each industry from the gross product—all three factors being given.

† As in Table III, so in this, the commercial classes, including clerks, have been excluded from consideration.

amount received in the United States if our working classes were paid at the same rate as those of that country.

Probably some will object that the foregoing statement is more curious than useful; but I have compiled it mainly for the purpose of comparison with another table (Appendix V), in which I have set forth the total number of persons engaged in each occupation employing more than 6,000 hands in the United Kingdom, distinguishing males from females, and their average weekly and total annual earnings. It would be absurd to claim for this or any other estimate of the average or total earnings of the working classes, or even any considerable section of them, more than a rough approximation to the actual facts. The most that can be done is to endeavour to ascertain the average rate of wages ruling for each class of *employés* in one or two leading districts, and to build thereon a general average, whence the total earnings may be deduced. This I have carefully endeavoured to do, selecting my returns of average wages in particular industries chiefly from the figures published in the "Miscellaneous Statistics of the United Kingdom," supplemented, where necessary, by returns obtained on direct application to manufacturers, personal knowledge, and otherwise.

The statement in question excludes from separate enumeration an additional number of 1,570,000 who are employed in a multitude of minor industries and occupations, and, for obvious reasons, it takes no account of the professional class, whose average earnings it would be quite impossible to estimate.

It will be observed that of a total of about 14,300,000 persons employed in the United Kingdom in so-called productive (including commercial) occupations, 12,677,000 are embraced in Appendix V. Assuming our calculations as to their average earnings to be approximately near the mark, these 12,677,000 persons would earn upwards of 535 millions sterling a year. We have seen that, in addition to this number, there are more than a million and a half, after deducting the professional classes, properly so-called, who are more or less in receipt of wages. If we estimate that this remainder will earn approximately the same average wages as those employed in the 181 occupations we have tabulated in Appendix V, there would be a further 66 millions to add to the sum total of earnings, bringing it up to over *six hundred millions sterling*.

This sum, it will be noticed, does not include the earnings of the army, navy, or ordinary seamen. The former are scarcely wage-receiving classes, in the ordinary sense of that word, while the average wages of the latter are very difficult of estimation.

From the *six hundred millions* which we have reached as the earnings of the working classes of this country in 1880, there falls to be deducted a certain unknown and unknowable proportion in

respect of the employers who are included in the figures given. This has been inevitable in consequence of the failure of the Census to distinguish operatives from employers.* As to what that proportion should be, probably no two of us will quite agree. Professor Leone Levi, in his calculation of the earnings of the working classes made in 1867, put it at $2\frac{1}{2}$ per cent.† For my own part, I should be disposed, as I have already indicated, to put it at a higher figure than this; but adopting Mr. Levi's deduction for the time being, we have still more than *five hundred and eighty million* pounds sterling as the annual wages bill of the English working classes.

Let us now compare these figures with those that Mr. Leone Levi found to represent the condition of things existing in 1867. Dealing then with 11 millions of workers—of whom 300,000 were professional, including the army, navy, and police—that gentleman found the *average* annual wages paid over the whole to be 38*l.*, against the average of 42*l.* per head shown in the returns I have ventured to bring before you. Hence it appears that if both computations can be accepted as approximately true, the average increase in the interval has been 4*l.* per head or about 10 per cent.

Again, Mr. Leone Levi found the aggregate earnings of the eleven million hands embraced in his calculation to be 418 millions. In the statement that forms the basis of my calculations, the total number dealt with is over 14 millions, and their aggregate earnings, after the same deduction for masters as that made by Mr. Levi, is more than 580 millions, being an *increase of one hundred and sixty-two millions.* If the earnings of the army and navy and merchant seamen were included in this, as in Mr. Levi's computation, the difference would, of course, be much more.

A reference to the preceding table (IVA) will show that the average wages paid in the United States in 1880, over more than 10 million persons, was 64*l.* per annum, against the average of 42*l.* which we have computed for the United Kingdom. According to these figures, therefore, the average wages paid to all classes of wage-earners in the United States may be taken roughly at 22*l.* a year, or 52 per cent. more than in the United Kingdom.

IV.—*Recent Increase of Wages Earned in Different Countries.*

That there has been a very great increase in the average earnings of the working classes within the last quarter of a century is a fact sufficiently well known to the Fellows of this Society. Our

* This distinction is made in the census returns of France, Germany, Austria, &c., but not in the United States census.

† "Wages and Earnings of the Working Classes," p. 16.

late President, in one of the most able papers * that we have ever had, made it so clear that "he who runs may read." It is not my intention to follow Mr. Giffen over the ground that he has already so well covered, but I would like to show briefly how other countries compare with our own in the improvement of the condition of the working classes.

Since the year 1850, there has been a more or less considerable rise of wages throughout the whole civilised world—a rise exceeding that of any previous period of equal duration, both in range and volume. The causes of this fact are not far to seek. They are mainly to be found:—

1. In the facilities for the transaction of business and the exchange of commodities supplied by the development of the railway system, and the growth and improvements that have marked the progress of steam shipping.

2. In the general introduction of labour-saving machinery in all industries of national importance, whereby a much greater production has been rendered possible with the same amount of labour in a given period of time.

3. In the enormous increase in the imports and exports of all the leading countries of the world, involving, as a necessary corollary, a better demand for the specialities of each country on the part of all other countries.

4. In the discoveries of gold in Australia and California, whereby a greater abundance of the precious metals has been secured to all civilised nations.

The extent of the advance of wages previous to 1850 may be measured by the circumstances of agricultural labour, as ascertained by Sir James Caird. In 1770 the average wages of that class of labour in England amounted to 7*s.* 3*d.* per week; in 1850 they had advanced to 9*s.* 7*d.* per week; and in 1878 they were not less than 14*s.* per week. Hence, the increase that took place during the eighty years preceding 1850 was only 2*s.* 4*d.*, or 32 per cent., whereas in the next twenty-eight years the amount of increase was 4*s.* 5*d.*, or 46 per cent. In Cleveland, and in some parts of Lancashire and Cheshire, agricultural labourers have recently been commanding as much as 17*s.* per week.†

There can be little doubt, I think, that the price at which ordinary agricultural labour can be purchased in the open market,

* "On the Progress of the Working Classes during the Last Half-Century." By Mr. Giffen. *Statistical Journal*, vol. xlvi, p. 593.

† In the Report of the Royal Commission on Agriculture, a table is given showing the wages paid on a large estate in Northumberland in each year between 1831 and 1880. In the former year it was 11*s.*, and in the latter 18*s.* per week, both sums being in addition to cottage rent free, 60 to 80 stones of potatoes, and 2 bushels of wheat yearly.

is largely a determinant, in a rough and ready sort of fashion, of the cost of other labour. Whenever the wages paid to miners, artizans, &c., show an increase beyond a certain percentage over the wages paid in agriculture, labour is so far attracted from the latter to the former as to readjust the balance which temporary fluctuations of supply and demand had disturbed. Agricultural labour necessarily takes, and always will take, a lower range than the more or less skilled labour employed in industry. It is more easily acquired, involves no apprenticeship or technical training, is more constant, and less subject to the vicissitudes of good and bad trade, is less exposed to risk and danger, and, being pursued in the open air, is more agreeable and healthy. But once the wages paid in industry have passed beyond the point at which they meet the special conditions differentiating manufactures from agriculture, the exceptional supply of labour so created is furnished chiefly from the ranks of the agricultural population, as have been the enormous accretions within recent years to the railway, mining, and other great labour-employing interests.† It therefore becomes important to consider the earnings of agricultural labour in different countries, and the extent to which they have increased in recent years. With these introductory remarks I proceed to give the following figures :—

TABLE VIA.—*Wages Paid to Agricultural Labourers at different Periods.*

Country.	Average Weekly Wages Paid in the Years			Percentage Increase, 1880 on 1850.
	1850.	1870.	1880.	
	s. *d.*	*s.* *d.*	*s.* *d.*	
England (Cheshire)	9 7	15 –	17 6	66
France (general average)	9 –	12 6	14 –	55½
Germany (Hesse)	8 6	10 6	12 6	50
United States (Massachusetts)*	16 –	20 –	25 –	56½

* With board.

Showing that in the United Kingdom the percentage increase has been larger than in any other of the four chief industrial countries

† Between 1861 and 1881 the numbers employed in certain industrial occupations, increased in England and Wales as under :—

	1871.	1881.
Coal mining	271,342	511,000
Shipbuilding	47,400	72,000
Railway labour	180,000	259,800

of the world, although the amount has been slightly greater in the case of Massachusetts.* In every case except that of France the figures are subject to the obvious criticism that they apply only to particular districts, which may be very far from representing the average of the country; but it is an equally obvious reply that wages could scarcely have advanced so materially in one locality without affecting the cost of the same class of labour, although not of course necessarily in an equal degree, in other districts.

It is extremely difficult, even in so apparently simple a matter as agricultural labour, to get exactly parallel conditions. In France, for example, a certain proportion of the agricultural population follows some other occupation whereby they are enabled to increase their earnings to an extent estimated by Lord Brabazon at 7*l.* to 8*l.* a-year.† Again, in the United States the wages of agricultural labour are stated to vary, *without board*, from 3*s.* per day in Rhode Island to 10*s.* per day in Connecticut.‡ In America, however, the rule is to board and lodge the agricultural labourer, and where this is not done an allowance of about 2*s.* per day is generally made as an equivalent.

One of the most valuable records that we possess of the range of wages in different industries since 1850 is that furnished by the compilation which Mr. Lord prepared last year for the Manchester Chamber of Commerce. Mr. Lord's figures showed that in ten different industries (including four departments of the cotton trade) there had been a percentage increase in 1883 on the wages earned in 1850 of 39·18 per cent., the increase ranging from 10·30 per cent. in the case of mechanical engineering to 74·72 per cent. in the case of medium cotton spinning and weaving. Only in one of the industries dealt with—that of iron and steel—had there been a decrease in the later as compared with the earlier period. It is to be remarked, that while Mr. Lord's figures do not adequately represent the iron trade proper, of which Manchester is scarcely a centre, they may be taken as faithfully presenting the actual condition of things in respect of the other industries dealt with, which are all more or less largely carried on in that district. The *average increase* of wages paid in the following leading industries between 1850 and 1883 was found to be as under:—

* It should be pointed out—although the fact is perhaps sufficiently obvious—that in Massachusetts the wages paid in agriculture take a higher range than they do in the West and South, where they are affected by negro labour.

† "Reports respecting the Condition of the Industrial Classes, &c., in Foreign "Countries."

‡ Ibid.

TABLE VII.—*Average Increase of Wages paid in Manchester District between* 1850 *and* 1883.

	Average Increase of Wages.	Total Number Employed in United Kingdom.
Cotton trade	40·70	523,754
Bleaching, &c.	50·00	39,691
Calico printing	50·00	39,318
Fitters, turners, &c.	10·30	78,828
Smiths	24·00	147,456
Carpenters and joiners	50·00	295,958
Bricklayers	46·00	129,966
Masons	34·00	131,476
Plasterers	31·00	34,662
Labourers	32·00	771,501
Mechanics	77·00	36,481
Average increase	40·00	2,220,091

If it were safe to assume (which is very doubtful) that the above increase applied to the country generally, as well as to the Manchester district, it would be found to cover 30 per cent. of our whole industrial population.

The foregoing trades have not been selected with any preconceived idea of showing a desired result, but simply because they are those which appear in Mr. Lord's returns, which I have adopted in preference to many others that might have been selected. It is, however, not a little remarkable that they show an average increase of wages that almost exactly corresponds with that brought out by a comparison of the total amount paid in wages in the industries of the United States for almost the same dates. For reasons which I have already explained, the returns of the wages paid in the United States are generally more to be depended on than those ascertained or computed for other countries, and hence I have some confidence in presenting the following tabular statement showing the total number of persons employed in the manufacturing industries of the United States, with their total and average annual earnings, in each of the Census years 1850, 1860, 1870, and 1880:—

Census Year.	Average Number of Persons Employed. [000's omitted.]	Total Amount Paid in Wages during Year. [000's omitted.]	Average Annual Wages Paid per Person Employed.
		$	$
1850	956,	236,755,	248
'60	1,310,	378,878,	289
'70	2,050,	775,584,	378
'80	2,731,	947,953,	347

From which it will be observed that between 1850 and 1880 the *average wages* paid in the United States increased by 39·9 per cent., as against an average increase of 40 per cent. shown in the eleven industries embraced in Mr. Lord's tables.

This increase, however, as might be expected, has been very far from uniform. The industries in which the greatest rise or fall has occurred are set forth in Appendix VI, whence it appears that in the State of Massachusetts, between 1860 and 1883,* the greatest increase (79 per cent.) took place among stone workers; the next greatest (48 per cent.) among machine makers; and the next (39 per cent.) among flax and jute workers. In the cotton, furniture, paper, dyeing and bleaching, and shipbuilding industries, the wages paid were lower in 1883 than in 1860.

Some of our ardent free-trade friends may perhaps be disposed to regard these facts as a triumphant vindication of their economic theories. The complexion of the case is, however, somewhat changed when we examine the detailed figures relating to France, which appears to have made greater progress during the period under review than either this country or America. A valuable series of official statistics, published in the "Annuaire Statistique de "la France," shows the average rates of wages paid in Paris and in the provinces in twenty-three leading industries during the years 1850 and 1880 respectively. I do not know how these averages were got by the French Government, but taking them for what they are worth, they show that in the interval referred to the mean advance in Paris was 53 per cent., and in the provinces 65 per cent. As these figures apply to 1,497,000 workmen out of a total of 1,554,000 ascertained to be occupied in industry by the French Census of 1876, it may be assumed I think, that they are of pretty general application.

I do not happen to possess, with respect to other countries, the same authoritative figures that I have just given you with reference to the improvement in wages in this country, the United States, and France. On consulting general returns in my possession, I find a very considerable advance of wages to have taken place in the north of Germany, and also, although to a less extent, in Belgium.

It is not without interest, in view of the rivalry that is so often heard of as threatened or successfully achieved by the latter country, to examine the rates of wages in the industries in which that rivalry is understood chiefly to obtain. The official reports to

* I am compelled to select the year 1860, because I have no reliable figures of a similar kind for 1850.

the Belgian Government show that the average rates of wages paid in Belgium in 1882 were :—

At blast furnaces	3·09	frs. per day.
In rolling mills	3·81	,,
,, steel works	3·58	,,
,, lead and zinc works	2·75	,,
,, coal mines	3·09	,,

thus giving an average of 2*s.* 6*d.* per day, or 15*s.* per week, for a total of 132,000 *employés*, which is a very considerable proportion of the total industrial population of Belgium.* In the United Kingdom the average wages paid in the same occupations will probably be 50 or 60 per cent. higher, and we have already seen that in the United States they are 92 per cent. higher.†

V.—*Female Labour.*

I now propose to invite you to consider some of the circumstances that determine both the efficiency and the earnings of the working classes in different countries. The industrial circumstances of the community, as distinguished from the individual, are more or less affected by :—

(1). The extent to which the labour of women and young children comes into competition with that of male adults.

(2). The proportions of the whole population engaged in productive, as distinguished from unproductive labour.

(3). The relative cheapness of the cost of living.

In order that the facts as to the first of these points may be fully before you, I have compiled a table (Appendix VIII) which shows the total number of women engaged in each of seven classes of occupations in the United Kingdom, the United States, France, Prussia, and Austria. The facts brought out by this table are summarised in the following statement, which shows the total numbers of both sexes employed in specified or productive occupations in each of the five countries dealt with, together with the total number of females, and the percentage of females to the total working population in the most recent Census years :—

Country.	Total Working Population.	Total Number of Females Employed.	Percentage of Females.
United Kingdom	15,107,000	4,573,443	30
France	16,550,000	5,089,000	31
United States	17,392,000	2,645,079	15
Prussia	11,006 000	2,937,000	26
Austria	11,394,000	4,363,000	38

* In this figure are included about 10,000 women and a considerable percentage of children under 16 years of age.

† The average wages paid to ironworkers and miners together in the United States in 1880 was 75*l.* per annum, against 39*l.* for Belgium.

It may be observed that evidence is afforded by these figures of the fact that the employment of women in competition with men tends to the lowering of wages, for we find that in France and Austria, the countries that employ the largest number of women, wages generally take a lower range than in the other countries tabulated, while in the United States, where wages are considerably higher than in any of the other four countries, the number of women labouring for their daily bread is proportionately small. In Great Britain, the relative percentage of females employed is exceptional, owing to the great magnitude of the textile trades.

VI.—*Juvenile Labour.*

The next table to which I invite your attention (Appendix IX) shows the number of children under 15 years of age employed in different industries in the United Kingdom and the United States. Relatively to the whole industrial population employed, the United States has a larger number of children at work than ourselves, the average percentage of juvenile *employés* being 6·6 per cent. of the whole working population in the former country, as compared with only 5·1 per cent. in this country. In Prussia, on the other hand, on account of the stringent laws that are enforced with respect to juvenile labour, it only represents 2·7 per cent. of the whole working population, the total number under 15 years of age being 299,000 in a working population of 11 millions.

VII.—*The Industrial Classes.*

Another point that is pertinent to the question we are discussing is that of the percentage number of the population of each country engaged in industrial, as distinguished from agricultural, domestic, and professional pursuits. The relative position occupied by the several leading countries of the world in this regard is shown in Appendix X, whence it appears that while 23·0 per cent. of the total population of England were engaged in manufacturing industries in 1880, the numbers so employed in other countries were :—

	Per Cent.
In the United States	7·6
„ Prussia	13·0
„ France	12·0
„ Belgium	17·2
„ Austro-Hungary	8·4
„ Italy	0·9
„ India	14·6
„ Canada	5·8

Francis II is said to have remarked to Napoleon that "the "English are a nation of shopkeepers," and that to secure for our-

selves the commerce of the world, we would not hesitate to set the continent in flames. These figures may be held to prove that we maintain the former, without needing to fulfil the latter, condition.

VIII.—*Unproductive Population.*

I come now to examine the proportions of the populations of different countries who are not in any way wage-earners. This large order is made up mainly of four classes, viz.: women, young children, pensioners, and persons receiving annuities, &c. I have not attempted to distinguish the numbers belonging to each of these several classes, but the total numbers of non-wage-earners relatively to the whole population of each country is set forth in Appendix XI.

Briefly stated, the figures embraced in this table show that the unproductive classes vary from 65 per cent. of the whole population in the United States, to 5 per cent. in the colony of Victoria. The United Kingdom, France, and Prussia, with 54 per cent., 56 per cent., and 59 per cent. respectively, come within 5 per cent. of each other; while in Austria only 31 per cent. of the population is returned as unproductive.*

IX.—*Distribution of Population according to Occupations in Different Countries.*

The last, but in some respects the most important, of the tables bearing on the subject of the occupations of the people, which I have to lay before you is a summary statement showing the distribution, in this regard, of the population of nine of the principal countries of the world (Appendix XII). To those who wish to obtain a knowledge of the industrial condition of those countries, I commend the study of this statement. In reference to its compilation, I would only remark that owing to the different systems adopted in the enumeration of occupations for Census purposes, it has involved a very great deal of labour. There is no class with respect to which so much difficulty is found in assigning their proper place in the Census reports as those who are described as in commerce or trade. In the Census of the United Kingdom the commercial class is divided into eleven different occupations, all of them, excepting only those who come under the elastic term "merchant," being easily recognisable; but in the United States' Census, in lieu of that general description, we have no fewer than thirty distinct descriptions of so-called traders, all or the majority of whom would figure in the English Census reports

* In the "productive classes" I have included both the professional and the domestic classes, because they are both wage-earners, although strictly speaking they do not produce wealth.

among the industrial class, to which, accordingly, for the sake of securing uniformity, I have relegated them. I have done the same with over 53,000 hucksters, and 19,000 boarding house keepers, who are doubtfully provided for in our Census among the industrial classes. Even, however, when we have taken the utmost pains to have the conditions of comparison strictly relevant and parallel to each other, the liability to error is such that the results formulated can only be accepted as approximate. For after all the transpositions possible have been made, there are still obvious discrepancies which it is impossible entirely to reconcile.

X.—*Comparative Cost of Living in Different Countries.*

The length to which this paper has already run is such as to render it impossible to consider as exhaustively as their importance deserves the differences that distinguish one country from another in regard to the purchasing power of money. And yet, if this point were not to be included, we should only present one view of the question, for obviously if the additional wages earned in one country by comparison with another are all absorbed in the greater cost of living, the gain is nil. Confining these remarks more especially to industrial as distinguished from agricultural countries, I have come to the conclusion that an examination of the statistics of the retail prices paid for commodities in different countries will show that there is not such a material difference, as between one country and another, as is commonly supposed, and that the tendency towards a further equalisation of prices is becoming increasingly apparent, for two obvious reasons, viz. :—

(1.) That countries which have an excess of agricultural and other produce of domestic consumption, tending to make prices rule very low, are enabled by exportation to level up to the European average.

(2.) That countries whose consumption of such commodities is in excess of their production, are enabled, by importations from countries differently circumstanced, to level down to the average, prices that would otherwise have a tendency to rule exceptionally high.

This is a law that will be found to operate more or less in all countries that do not artificially raise the cost of food products by imposing abnormally high duties ; and it applies to all articles of domestic consumption subject to international exchange. The breadstuffs of the United States are increasingly finding their way into other European countries besides our own, and the universal increase of both imports and exports in all progressive countries testifies to the operation of the law just enunciated.

It is, however, quite a different matter when the items of

clothing and house rent are considered; and as these are mainly made up of wages, both must rule highest where the highest wages prevail. The proportions of a working man's income required for his necessary expenditure, propounded some years ago as an economic law by Dr. Engel, of Berlin, allow an average of 16 per cent. for clothing and 12 per cent. for lodging out of an income of from 50*l.* to 55*l.* a-year. Hence, in a general way, only 28 per cent. of a working man's wages would go towards meeting these two items of outlay, leaving 72 per cent. as a remainder which, for reasons that have just been cited, are but little liable to variation as between one industrial country and another.*

The facts just stated receive a remarkable corroboration from certain statistics recently published as to the comparative cost of living in Great Britain and Massachusetts.† It is shown that on any basis of yearly expenditure the prices of articles entering into the cost of living in the year 1883 were, on the average, 17·29 per cent. higher in Massachusetts than in Great Britain; that of this figure 11·49 per cent. was due to higher rent, leaving 5·8 per cent. as indicative of the higher cost of living in Massachusetts, compared with Great Britain, as regards the remaining elements of expense.‡

Nothing would be easier than to burden this paper with many pages of figures designed to show the cost of provisions, &c., in different countries; but for what appear to me to be sufficient reasons I refrain from doing so. In the first place, I believe it to be impossible to institute a just comparison of this kind unless the *quality* of the commodities enumerated has been exactly ascertained, —which it cannot be—since we know that with some articles in everyday use, as, for example, that of tea, the retail price varies from 50 to 100 per cent. In the next place, it is quite an impossibility to furnish a figure that shall represent fairly the *average* price of any given commodity in our own or any other country, since we further know that as between one district and another the prices of the same commodities vary enormously. It may suffice to remark generally, that as the result of examining many tables of figures furnished by our own and other consular and diplomatic agents, I have come to the conclusion that the cost, as well as the standard, of living is approximately as much below that of our own country in France, Germany, and Belgium, as that of the United States is

* Dr. Engel assumes 62 per cent. of the whole income as necessary for subsistence, and apportions the other 10 per cent. to fire and light, education, health, and recreation.

† "Report on the Statistics of Labour, 1883," p. 469.

‡ It is claimed that in respect of the higher rent charged, a certain proportion of value was returned to the working classes in the form of better lodging.

above it; while in our Australasian colonies and in Canada the greater cheapness of provisions is counterbalanced, or nearly so, by the increased cost of house rent, clothing, and other items.

That there has, within recent years, been a tendency towards the cheapening of articles of every-day consumption in all countries is, I think, incontestable; and that this movement, running concurrently with a better rate of remuneration for labour, has induced a higher standard of living than formerly, is equally obvious to the student of economic statistics, notwithstanding all that we are accustomed to hear of the dangers of population pressing on the means of subsistence. Mr. Giffen has already shown you the very considerable fall that has taken place in the prices of commodities in recent years in our own country,* and it would be comparatively an easy matter to prove that like causes have produced like results elsewhere, although not probably to the same extent. Our unique shipping facilities, our great command of capital, and an insular geographical position, must always enable us to take advantage of any fall in the values of commodities abroad more readily and to a greater extent than countries that do not equally possess those advantages; and it is unquestionably to this fact that we owe it that we can purchase to-day American-grown wheat even cheaper than it can be bought in many parts of the United States. I do not, of course, overlook the fact that in many cases the development of the means of commercial intercourse has increased the price of bread-stuffs, &c., by bringing producer and consumer together, and thus enabling the former to command the higher rates of a great market to which he would not otherwise have had access. But if this fact has raised the nominal value of food staples in many rural districts, compensation has been found in the greater flow of capital thereby induced, and other commodities, scarcely less necessary, being thereby acquired at a lower cost.

XI.—*Recapitulation.*

In concluding this paper, I feel that although it has greatly exceeded such limits of your time and patience as I was entitled to claim for the importance of the subject, it can only still be considered as suggestive rather than exhaustive. There are many other phases and aspects of the labour question necessary to be dealt with in a survey of this kind which I am reluctantly compelled to let alone. Among others, I may refer to the character of the houses available for the occupation of the working classes, their hours of labour, their sanitary surroundings, their dietary, their taxation, their savings, and their means of providing their

* "On the Fall in the Price of Commodities in Recent Years."

families with a cheap and a good education. As it is, I think the facts and figures brought forward in this paper justify me in presenting the following recapitulation:—

(1.) That as regards industries that allow of a comparison being made on approximately similar *data*, English labour is more efficient in reference to the *quantity* produced than that of other countries.

(2.) That in agricultural, and very largely, also, in industrial labour, the conditions are such as to render impossible any reliable estimate of the comparative efficiency of workers at home and abroad.

(3.) That in labour (such as earthwork and mason work) requiring endurance and strength, as well as a certain kind of skill, English labour compares very favourably with all others.

(4.) That in a number of selected occupations, which may fairly be regarded as typical of the whole, the wages paid in the United Kingdom are 45·4 per cent. under those paid in the United States, as represented by Massachusetts, and 42 per cent. and 58 per cent. above those of Germany and France respectively.

(5.) That in our Australian colonies the average wages paid in the same occupations are 3·6 per cent. under the average of the State of Massachusetts, and 77 per cent., 157 per cent., and 194 per cent. above the averages of the United Kingdom, Germany, and France, respectively.

(6.) That in other European countries wages generally take a lower range than in those just specified.

(7.) That in the United Kingdom the total amount of wages paid to the working classes in 1880, as computed largely from official returns of their average earnings, was over 580 millions sterling, being an average of 42*l.* per worker.

(8.) That between 1850 and 1883 the average earnings in a number of typical occupations advanced by 40 per cent. in the United Kingdom; that between 1860 and 1883 the average wages ascertained to have been paid in the United States *in all occupations* (excluding professional) increased by 39·9 per cent.; and that in France the average wages paid in a great majority of manufacturing industries increased 53 per cent. in Paris, and 65 per cent. in the country.

(9.) That the largest proportion of wage-earning females, relatively to the whole population, is found in Austria, France, the United Kingdom, Prussia, and the United States, in the order in which these countries are enumerated.

(10.) That juvenile labour is more largely employed in the United States than in Great Britain and Germany.

(11.) That the largest industrial population is to be found in

the United Kingdom, where it numbers 23 per cent. of the total population, against 13 per cent. in Prussia, 12 per cent. in France, and 7·6 per cent. in the United States.

(12.) That so far as Census enumerations can be depended on, they show that the United States possess the largest unproductive population, and that the proportions of the whole population in that category are 54, 56, and 59 per cent. in the United Kingdom, France, and Prussia, respectively.

(13.) That except in reference to house rent and clothing, there are not any very remarkable differences in the average cost of living as between one leading country and another, and certainly not such differences as would be found to correspond with the variations in wages.

One word more. If as Voltaire says, "life is thickly strewn "with thorns, and there is no other remedy but to pass quickly "through them," we have at least some grounds for believing that it is not less tolerable in our own, than in other countries, for those who labour for their daily bread; scarcely even excepting that wonderful Republic of which I have had occasion to speak so much, where, in Southey's burning words—

> "Washington hath left
> His awful memory
> A light for after times."

APPENDIX.

I.—*Statement showing the Average Weekly Wages Paid in the Building and other Trades of different Countries in or about* 1880.

Trade.	England.	United States.	North Germany.	France.	Average of Four Countries.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Joiners	36 4	52 8	21 6	19 6	32 $-\frac{1}{2}$
Bricklayers	22 $8\frac{1}{2}$	55 –	20 6	17 6	28 11
Masons	32 8	58 6	21 –	18 –	32 $6\frac{1}{2}$
Plasterers	36 4	55 2	20 –	17 9	32 $3\frac{3}{4}$
Labourers	22 9	35 10	16 –	14 –	22 $1\frac{3}{4}$
Blacksmiths	33 –	67 3	28 –	19 6	36 $11\frac{1}{4}$
Fitters	32 –	53 5	27 –	22 6	33 $8\frac{3}{4}$
Turners	32 –	50 –	25 6	22 –	32 $4\frac{1}{2}$
Colliers	26 3	51 3	20 6	19 –	29 3
Painters (house)	31 6	61 1	21 6	18 –	33 $-\frac{1}{4}$
Plumbers	37 4	75 –	22 8	17 6	38 $1\frac{1}{2}$
Shoemakers	27 3	50 –	19 –	16 4	28 $1\frac{3}{4}$
Tailors	25 6	57 –	18 6	16 –	29 3
Puddlers	43 –	87 1	29 –	31 6	47 $7\frac{3}{4}$
Agricultural labourers	17 6	34 –	14 –	13 –	19 $7\frac{1}{2}$
Average	30 5	55 2	21 8	18 10	31 9

II.—*Statement showing the Daily and Average Weekly Wages Paid in specified Occupations in Australia and New Zealand.*

Occupation.	New South Wales.	Victoria.	Queensland.	New Zealand.	Weekly Average of Four Colonies.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Carpenters	10 –	10 –	10 –	9 –	58 6
Masons	11 –	10 –	10 –	9 –	60 –
Bricklayers	11 –	10 3	10 –	9 –	60 –
Plasterers	11 6	10 –	11 –	9 –	60 3
Labourers	8 6	7 –	7 6	7 –	45 –
Painters and glaziers	9 6	9 –	9 –	7 –	51 9
Cabinet makers	10 –	9 6	9 –	9 –	54 –
Plumbers	10 6	10 –	11 –	—	63 –
Blacksmiths	9 6	11 6	11 –	9 –	60 –
Moulders and turners	9 6	11 –	11 6	8 6	60 –
Tin smiths	9 –	8 6	8 6	8 –	48 –
Shoemakers	9 –	8 6	8 –	7 6	48 –
Wheelwrights	11 –	9 6	—	—	61 6
Tailors	9 –	9 –	7 6	9 –	50 –
Farm labourers	3 6	4 3	5 –	3 6	24 –

III.—*Wages in Russia in* 1880 (*Neighbourhood of St. Petersburg*), *in Paper Money.*

	Copecks per Day.	Sterling.
		s. *d.* *s.* *d.*
Braziers	75 to 120	= – 10 to 1 5½
Ironfounders	60 „ 110	= – 8¾ „ 1 4
Labourers	60 „ 70	= – 8¾ „ – 10⅐
Machinists	100 „ 120	= 1 2½ „ 1 5½
Masons	80 „ 100	= – 11½ „ 1 2½
Moulders	150 „ 200	= 1 9¾ „ 2 5
Smiths	75 „ 150	= – 11 „ 1 9¾
Stokers	60 „ 75	= – 8¾ „ – 11
Turners	120 „ 200	= 1 5½ „ 2 5
Unskilled workmen	60 „ 70	= – 8¾ „ – 10⅐
Whitesmiths	120 „ 200	= 1 5½ „ 2 5

IV.—*Statement showing the Number of Hands Employed in the Leading Industries of the United States in* 1881 (*distinguishing Males above* 16 *Years of Age from Females and Young Persons*), *with the Aggregate and Average Wages Paid during the Year.**

Industry.	Number of Hands Employed.		Total Amount Paid in Wages during Year [000's omitted.]	Average Wages per Employé per Annum.	Equivalent in Sterling.
	Males above 16.	Females and Young Persons.			
			$	$	£ *s.* *d.*
Sailors (steamer)	56,811	—	25,982,	457	95 – –
Agricultural implement works	38,313	1,264	15,359,	388	80 16 8
Blacksmiths	33,992	524	11,126,	322	67 1 8
Railway *employés*	418,957	—	195,350,	466	97 1 8
Boot and shoemakers	104,021	29,400	50,995,	382	79 11 8
Bread bakers	18,925	3,560	9,411,	419	87 9 10¼
Brick and tile makers	59,032	7,300	13,443,	203	42 5 10
Carpenters	53,547	594	24,582,	454	94 11 8
Carriage and waggon builders	43,630	1,700	18,988,	419	87 9 10¼
Tailors	77,255	83,558	45,940,	286	59 11 8
Coopers	24,435	1,900	8,992,	341	71 – 10
Cotton operatives	64,107	120,320	45,614,	247	51 9 2
Millers	58,339	168	17,422,	298	62 1 8
Ironfounders and machinists	140,459	4,880	65,982,	454	94 11 8
Cabinet makers	45,186	3,430	20,383,	419	87 9 10
Iron and steel workers	133,203	8,200	55,476,	393	81 17 6
Workers in leather	23,287	5,300	9,204,	322	67 1 8
Sawyers, &c.	141,564	6,350	31,845,	215	44 15 10
Mixed textile workers	17,471	25,900	13,316,	307	63 19 2
Printers, &c.	45,880	12,400	30,531,	523	108 19 2
Shipbuilders	21,338	7	12,713,	596	124 3 4
Tin, copper, and sheet iron	23,903	2,300	10,722,	409	86 4 2
Workers in tobacco	40,099	13,198	18,464,	346	72 1 8
„ woollen goods	46,978	39,520	25,836,	299	62 5 10
Miners—coal, iron, &c.	195,968	24,507	71,992,	326	67 18 4

* This table is compiled from the Tenth Census of the United States.

V.—*Total Number of Persons Employed in different Leading Occupations in the United Kingdom, with Average Weekly and Total Annual Earnings.*

	Total.	Males.	Females.	Average Earnings per Week		Total Earnings per Annum.
				s.	*d.*	£
Agricultural labourers	1,333,448	1,212,999	120,449	12	–	41,603,578
Bakers	95,534	86,370	9,164	16	–	3,974,214
Bargemen, &c.	32,158	31,796	362	18	–	1,504,994
Bathing and washing service	205,353	3,601	201,752	12	6	6,673,971
Bellhangers and locksmiths	8,154	7,802	352	21	–	445,208
Blacksmiths	147,456	147,102	354	20	–	7,667,712
Board and lodging keepers	45,633	5,337	40,296	25	–	2,966,145
Boat builders	22,855	22,816	39	18	–	1,069,614
Boiler makers	34,862	34,862	—	20	6	1,858,145
Bolt and nut makers	8,823	6,386	2,437	15	–	340,084
Bonnet and hat manufactures	31,185	3,021	28,164	12	–	972,972
Bookbinders	25,497	11,443	14,054	12	–	795,506
Boot and shoe makers	267,352	228,361	38,991	16	–	11,121,843
Box makers and turners..	16,654	13,651	3,003	15	–	649,506
„ and paper bag makers	11,469	1,310	10,159	11	–	328,013
Braziers, &c.	32,682	31,625	1,057	18	6	1,572,004
Brewers	27,195	26,803	392	16	6	1,166,664
Bricklayers	129,966	129,881	85	21	–	7,096,143
Brick and tile makers	53,740	50,607	3,133	18	–	2,515,032
Broom and brush makers	14,836	9,892	4,944	17	6	675,038
Builders	34,003	33,866	137	22	6	1,989,175
Butchers	96,563	92,435	4,128	17	6	4,393,615
Button makers	6,449	2,324	4,125	12	6	209,593
Cabinet makers, &c.	70,241	61,223	9,018	20	6	3 743,844
Cabmen, flymen, &c.	34,817	34,817	—	17	6	1,584,173
Calenderers, &c.	23,720	18,299	5,421	21	6	1,325,948
Calico printers, &c.	39,318	29,189	10,129	22	–	2,248,989
Cane and rush workers	13,012	10,290	2,722	18	–	608,962
Carmen, carriers, &c.	157,209	156,445	764	19	6	7,970,496
Carpenters and joiners	295,958	295,734	224	24	6	18,852,524
Carpet and rug makers....	17,210	10,906	6,304	18	–	805,428
Carvers and gilders	9,764	9,405	359	22	6	571,194
Cellarmen	7,108	6,757	351	17	6	323,414
Cemetery and church officers	6,289	4,582	1,707	15	–	245,271
Chain and anchor makers	5,116	4,124	992	22	6	299,286
Charwomen	99,528	—	99,528	9	6	2,458,341
Chemists and druggists....	22,506	21,778	728	18	6	1,082,538
„ (manufacturing)	16,679	15,233	1,446	19	6	845,625
Chimney sweeps	7,858	7,779	79	17	6	357,539
China and porcelain	60,028	30,865	29,163	15	–	2,341,092
Coffee, tea, and grocery....	169,577	133,539	36,038	13	–	5,731,702
Cider and beer sellers	17,165	13,422	3,743	15	–	669,435
Civil service messengers, &c.	21,180	20,627	553	18	6	1,018,758
Civil service officers and clerks	25,568	22,352	3,216	20	–	1,329,536
Carried forward	3,801,718	3,101,656	700,062	—		156,002,764

V.—*Total Number of Persons Employed in Leading Occupations—Contd.*

	Total.	Males.	Females.	Average Earnings per Week.		Total Earnings per Annum.
				s.	*d.*	£
Brought forward	3,801,718	3,101,656	700,062	—		156,002,764
Commercial clerks	219,816	212,067	7,749	17	6	10,001,628
Cotton goods manufacture	523,754	193,055	330,699	14	6	19,745,525
Clock and watchmakers, &c.	27,657	26,829	828	19	–	1,366,256
Cotton printers, bleachers, &c.	39,691	29,540	10,151	17	6	1,805,940
Clog and patten makers...	7,868	7,792	76	18	–	368,222
Coachmakers, &c.	29,821	29,600	221	20	–	1,550,692
Coachmen and grooms	83,418	83,418	—	17	–	3,687,076
Coalheavers	16,313	16,304	9	16	–	678,621
Coal miners	436,348	432,848	3,500	18	6	20,988,339
Commercial travellers	41,829	41,829	—	30	–	3,262,662
Confectioners, &c.	31,193	14,790	16,403	16	–	1,297,629
Coopers and hoop makers	28,459	28,345	114	19	–	1,405,875
Copper goods workers, &c.	8,248	8,198	50	20	–	428,896
„ miners, &c.	5,181	5,181	—	18	–	242,471
Cord and twine makers....	19,145	13,358	5,787	16	–	796,432
Corn millers, &c.	33,909	33,237	672	21	–	1,851,431
Costermongers, &c.	55,706	33,851	21,855	14	–	2,027,698
Curriers	17,615	17,049	566	22	–	1,007,578
Cutlers	18,517	16,930	1,587	24	–	1,155,461
Dairymen, milksellers	33,847	25,997	7,850	18	–	1,584,040
Dealers, general	93,162	45,036	48,126	20	–	4,844,424
District and parish officers	14,912	11,895	3,017	16	–	620,339
Dock and harbour service	50,772	50,649	73	18	–	2,373,790
Domestic gardeners, &c....	95,483	78,572	16,911	16	–	3,972,093
„ indoor servants	1,695,887	98,645	1,597,242	14	–	61,730,287
Drapery, linen, &c.....	104,053	70,525	33,528	20	–	5,410,756
Dressmakers and milliners	447,467	3,048	444,419	14	–	16,287,799
Drivers, stokers, &c.	27,441	27,441	—	20	–	1,426,932
Engine drivers and firemen	78,085	78,085	—	20	6	4,161,931
Engine and machine fitters	78,828	78,828	—	22	–	4,508,962
Engine and machine makers.....	47,731	47,362	369	21	6	2,668,163
Factory labourers	37,454	22,888	14,566	15	–	1,460,706
Fancy goods (textile)	18,886	2,009	16,877	14	–	687,450
Farm bailiffs	23,001	23,001	—	20	–	1,196,052
Farriers, &c.	8,643	8,643	—	25	–	561,795
Fellmongers and tanners.	11,369	11,272	97	22	–	650,307
File makers	9,106	7,899	1,207	24	–	568,214
Fishermen	72,869	69,988	2,881	18	–	3,410,269
Fishmongers, &c.	24,300	19,283	5,017	24	–	1,516,320
Flax and linen manufacture.....	119,951	33,053	86,898	14	–	4,366,216
Florists and nurserymen	9,035	8,138	897	21	–	493,311
French polishers	12,491	10,049	2,442	20	–	649,532
Fruiterers and greengrocers.....	34,982	24,852	10,130	15	–	1,364,298
Furriers and skinners	9,024	5,480	3,544	14	–	328,474
Carried forward.....	8,604,935	5,208,515	3,396,320	—		356,513,756

V.—*Total Number of Persons Employed in Leading Occupations—Contd.*

	Total.	Males.	Females.	Average Earnings per Week. s.	d.	Total Earnings per Annum. £
Brought forward	8,604,935	5,208,515	3,396,320	—		356,513,756
Fustian makers, &c.	8,187	3,011	5,176	14	–	298,007
Gamekeepers	17,981	17,981	—	17	6	818,134
Gardeners (not domestic)	74,342	71,739	2,603	17	–	3,285,916
Gasfitters	13,052	12,905	147	21	–	712,639
Gas works service	21,804	21,800	4	17	6	992,082
General labourers	771,501	757,840	13,661	16	–	32,094,442
Glass manufacture.....	23,638	23,113	525	18	–	1,106,258
Glaziers and painters	116,317	115,809	508	17	6	5,292,424
Glove makers	15,583	2,298	13,285	14	–	567,221
Goldsmiths and jewellers.	26,675	22,826	3,849	17	6	1,213,711
Grooms, horsekeepers, &c. (not domestic)....	40,863	40,819	44	16	–	1,699,901
Guards (railway)	12,064	12,064	—	20	–	627,328
Gunsmiths	8,156	7,937	219	21	–	445,318
Gutta percha, &c.	5,912	4,157	1,755	17	–	261,310
Haberdashers and hosiers	10,363	5,300	5,063	21	–	565,820
Hairdressers, &c.....	17,115	16,303	812	18	–	800,982
Hardware dealers and ironmongers	20,840	19,629	1,211	18	–	975,312
Harness and whip makers	28,790	26,736	2,054	17	6	1,309,945
Hat makers, &c.....	25,376	14,885	10,491	21	–	1,385,530
Hosiery manufacture	43,684	20,236	23,448	14	6	1,646,887
Hospital and institution service.....	20,036	5,399	14,637	15	6	807,451
Hotel and inn service	67,198	39,799	27,399	14	6	2,533,365
House, life, ship, &c., service.....	15,068	14,821	247	15	–	587,652
Iron and steel workers	241,346	239,398	1,948	23	–	14,432,491
Jute, hemp, &c.	19,884	4,961	14,923	14	9	762,551
Ironstone miners	37,095	36,856	239	22	–	2,121,834
Labourers (railway) and navvies	42,212	42,212	—	17	6	1,920,646
Lace makers	45,785	11,675	34,110	14	6	1,726,095
Law clerks, &c.	24,602	24,502	100	16	6	1,055,426
Lead miners	11,908	11,704	204	16	–	495,373
Leather goods.....	6,288	4,838	1,450	17	–	277,930
Level crossing and pointsmen	7,406	7,229	177	16	6	317,717
Lime burners	3,677	3,636	41	17	–	162,523
Lithographers, &c.....	7,613	7,284	329	23	–	455,257
Machinists (undefined)....	20,918	5,748	15,170	15	–	815,802
Maltsters.....	9,850	9,792	58	22	–	563,420
Masons	131,476	131,348	128	24	–	8,204,102
Mechanics, artisans, &c. (undefined).....	36,481	34,124	2,357	25	–	2,371,265
Messengers and porters....	155,811	151,629	4,182	18	6	7,494,509
Millwrights.....	8,961	8,960	1	21	–	489,271
Mine service	4,658	4,628	30	23	–	278,548
Miners (undefined)	3,359	3,288	71	21	–	183,401
Musical instrument makers.....	9,690	9,663	27	25	–	629,850
Carried forward.....	10,848,500	6,476,989	3,599,103	—		461,299,402

V.—*Total Number of Persons Employed in Leading Occupations—Contd.*

	Total.	Males.	Females.	Average Earnings per Week.		Total Earnings per Annum.
				s.	*d.*	£
Brought forward	10,848,500	6,476,989	3,599,103	—		461,299,402
Nail manufacture	21,422	12,269	9,153	20	–	1,113,944
Needle makers	4,455	2,381	2,074	21	–	243,243
Office keepers (not Government)	6,193	1,892	4,301	17	6	281,781
Paper manufacture	27,111	13,942	13,169	15	–	1,057,329
Paperhangers	10,168	10,073	95	20	–	528,736
Parasol and umbrella makers.....	9,046	4,568	4,478	17	6	411,593
Paviors	4,771	4,771	—	18	–	223,284
Penmakers	2,723	220	2,503	16	–	113,277
Pewter manufacture, &c..	5,629	4,791	838	17	6	256,119
Photographers	6,661	5,352	1,309	22	–	381,009
Plasterers	34,662	34,620	42	24	–	2,162,909
Platelayers	26,156	26,156	—	21	–	1,428,117
Plumbers.....	45,801	45,548	253	25	–	2,977,065
Police	32,508	32,508	—	19	–	1,605,895
Printers	73,611	70,337	3,274	24	–	4,593,326
Provision curers, &c.....	21,909	14,895	7,014	20	–	1,139,268
Quarriers (slate)	15,764	15,764	—	21	–	860,714
„ (stone)	36,542	36,541	1	20	6	1,947,689
Railway, &c., wagon makers.....	7,912	7,854	58	22	–	452,566
Railway officials and servants (unspecified)	120,437	119,901	536	18	–	5,636,452
Sailmakers	5,225	5,178	47	21	–	285,285
Salesmen and buyers (unspecified)	6,403	3,719	2,684	25	–	416,195
Salt workers	2,982	2,823	159	24	–	186,077
Sawyers	30,049	30,046	3	21	–	1,640,675
Seamen (merchant service)	121,035	120,977	58	–	–	—
„ (royal navy)	16,811	16,811	—	—		—
Seamstresses and shirt-makers.....	165,584	2,437	163,147	12	–	5,166,221
Shepherds	39,900	39,795	105	14	–	1,452,360
Shipbuilders, &c.	28,024	27,969	55	22	–	1,602,973
Shipwrights, &c.....	44,057	44,035	22	23	–	2,634,609
Silk goods manufacture....	61,131	19,716	41,415	14	–	2,225,168
Slaters and tilers	13,884	13,869	15	21	–	758,066
Soldiers (non-commissioned)	56,935	56,935	—	—		—
Spinning and weaving machine, &c., makers	22,433	21,362	1,071	22	–	1,283,168
Stationers, &c.....	18,885	13,210	5,675	17	6	859,268
Stonecutters, &c.....	12,851	12,844	7	21	–	701,665
Sugar refiners.....	4,411	4,285	126	18	–	206,435
Tailors.....	201,880	143,963	57,917	16	–	8,398,208
Telegraph service	10,173	7,795	2,378	13	–	343,847
Thread manufacture	7,633	1,156	6,477	12	6	248,072
Timber workers, &c.	14,556	13,532	1,024	16	6	624,452
Tin miners	12,402	10,499	1,903	17	6	564,291
„ plate manufacture, &c.	38,937	34,387	4,550	17	–	1,721,015
Carried forward.....	12,287,762	7,588,715	3,937,039	—		520,031,768

V.—*Total Number of Persons Employed in Leading Occupations—Contd.*

	Total.	Males.	Females.	Average Earnings per Week.	Total Earnings per Annum.
				s. *d.*	£
Brought forward	12,287,762	7,588,715	3,937,039	—	520,031,768
Tobacco manufacture, &c.	24,099	13,841	10,258	12 –	751,880
Tool makers, &c.	10,307	10,088	219	22 –	589,569
Trimming makers	6,617	1,616	5,001	13 –	223,655
Warehousemen (not Manchester)	34,347	29,830	4,517	19 –	1,696,742
Waterworks service	2,972	2,964	8	20 –	154,544
Weavers (undefined).....	25,584	7,087	18,497	15 –	997,776
Whitesmiths, &c.	12,251	12,112	139	18 –	573,347
Wireworkers	10,230	9,621	609	21 –	558,558
Woodmen	11,544	11,539	5	18 –	540,259
Woollen cloth manufacture.....	150,655	72,846	77,809	14 –	5,483,842
Worsted manufacture	101,026	35,917	65,109	13 6	3,546,013
Total	12,677,794	7,796,176	4,119,210	Average 18 4	535,147,953

VI.—*Statement showing the General Average Weekly Wages Paid in the State of Massachusetts in* 1860 *and* 1883.*

Industry.	1860.	1883.	Per Cent. Increase, 1883 on 1860.
	$	$	
Cotton	6·50	6·45	—
Flax and jute	4·63	6·46	39
Food	8·81	9·81	11
Furniture	11·77	11·04	—
Leather	10·01	10·65	6
Machines	7·90	11·75	48
Metals.....	9·07	11·25	24
Paper	8·63	8·11	—
Printing, &c.	11·06	11·37	2
Dyeing, bleaching, &c.	9·90	8·67	—
Shipbuilding	20·84	20·44	—
Silk and silk goods	5·91	7·58	28
Stone	8·01	14·39	79
Woollen goods	5·38	6·90	28
Worsted „	6·10	7·32	20

* "Reports of the Massachusetts Bureau of Labour Statistics."

VII.—*Average Wages Paid in Paris and in the Departments of France, in each of the Years* 1853 *and* 1883.*

	Daily Wages Paid in Paris.		Daily Wages Paid in Provinces.		Numbers Employed in 1880.
	1853.	1883.	1853.	1883.	
	s. d.	*s. d.*	*s. d.*	*s. d.*	
Brickmakers	2 6	5 –	1 6	2 6	
Quarrymen	2 6	3 4	1 8	2 8	
Shoemakers	2 6	4 2	1 6	2 4	
Carpenters	4 2	5 –	1 10	3 2	
Wheelwrights	3 4	5 –	1 8	2 10	
Coppersmiths	3 9	6 –	1 10	2 11	
Ropemakers	2 6	3 4	1 5	2 4	
Slaters	4 2	6 –	1 9	3 3	
Blacksmiths	4 2	5 10	2 –	3 1	
Masons	3 6	6 3	1 10	2 11	
Farriers	3 –	5 –	1 7	2 8	
Carpenters	2 11	5 10	1 8	2 10	1,497,686
House painters	3 4	5 10	1 10	2 11	
Plumbers	3 4	5 –	1 10	2 11	
Potters	2 11	3 4	1 7	2 6	
Sawyers	2 11	4 10	1 8	2 11	
Locksmiths	3 4	5 5	1 9	2 10	
Tailors	4 2	6 8	1 11	3 2	
Navvies and ordinary labourers	2 6	4 –	1 3	2 4	
Turners (wood)	3 4	4 –	1 7	2 8	
„ (metal)	4 2	5 10	2 1	3 2	
Glaziers	3 1	4 7	1 8	2 7	
Average increase	—	53 p. ct.	—	65 p. ct.	—

* From the "Statistique Annuaire."

VIII.—*Statement showing the Number of Women Engaged in each Class of Occupation in the United Kingdom, France, the United States, Germany, and Austria.*

(Compiled from the official Census Reports of each country.)

Class of Occupation.	United Kingdom.	France.	United States.	Prussia.	Austria.
Agriculture	199,218	1,546,000	594,000	1,230,000	2,649,000
Professional	288,919	151,000	269,000	124,000	28,500
Domestic	2,038,941	1,399,000	1,092,000	855,000	644,000
Trade	26,344	428,000	57,000	145,000	74,000
Transportation	14,612		2,000		3,500
Manufactures	1,999,182	1,565,000	631,000	583,000	955,000
Mines	6,227		79		9,500
Totals	4,573,443	5,089,000	2,645,079	2,937,000	4,363,500

IX.—*Statement showing the Number of Children from 10 to 15 Years of Age Employed in each Class of Occupations in the United Kingdom and the United States respectively, with Percentage Proportion of Total Employés.* (Compiled from the official Census Reports.)

Class of Occupations.	United Kingdom. Number of Children Employed.	United States. Number of Children Employed.
Agriculture	13,771	720,729
Professional	132,186	107,637
Domestic	75,505	127,748
Trade, Transportation	103,692	25,223 / 3,402
Manufacturing, Mining	346,870	122,448 / 11,159
Totals	672,024	1,149,346

X.—*Total Number of Persons Employed in Industrial Occupations in each Country.* (Compiled from Census Reports.)

Country.	Total Population. [000's omitted.]	Total Number Employed in Industrial Occupations. [000's omitted.]	Percentage Total Population Employed in Industry.
United Kingdom	35,003	7,979,	24·4
England and Wales	26,094,	6,373,	24·5
Ireland	5,174,	691,	13·3
Scotland	3,735,	932,	24·4
United States	50,155,	3,837,	7·6
Prussia	27,279,	3,650,	13·4
France	37,321,	4,465,	11·9
Austria-Hungary	36,000,	2,279,	10·0
Belgium	5,520,	952,	17·2
Italy	26,801,	238,	0·9
India	253,891,	33,741,	13·3
Canada	4,324,	254,	5·8

XI.—*Statement showing the Number of Persons without specified Occupations in different Countries.* (Compiled from Census Reports.)

Country.	Total Population. [000's omitted.]	Total Number without Specified Occupation. [000's omitted.]	Percentage of Total Population without Specified Occupation.
United Kingdom	35,003,	19,703,	56
England	26,094,	14,786,	56
Scotland	3,735,	2,128,	56
Ireland	5,174,	2,788,	53
United States	50,155,	32,760,	65
France (1876)	37,321,	20,771,	56
Italy	28,010,	11,773,	40
Austria (1876)	22,144,	10,750,	31
Hungary (1876)	13,218,	8,181,	61
Prussia	27,279,	16,273,	59
Belgium	5,520,	2,834,	50
Spain (1879)	16,809,	3,680,	21
India	253,891,	134,988,	53
Victoria	862,	45,	5

XII.—*Summary Statement, showing the Distribution, as regards Occupations, of the Population of different Countries.*

(Compiled from Census Reports.)

Country.	Population at Last Census. (1=1,000.)	Professional Class.		Domestic Class.	
		Total Number.	Per Cent. of Total Population.	Total Number.	Per Cent. of Total Population.
England and Wales	26,094	647,075	2·4	1,803,810	6·9
Scotland	3,735	96,103	2·6	176,565	4·7
Ireland	5,174	198,684	3·8	426,161	8·2
United Kingdom	35,003	941,862	2·7	2,406,536	7·0
,, States	50,155	939,157	1·8	3,135,081	6·3
Prussia	27,279	587,210	2·1	886,177	3·2
France	37,321	665,000	1·8	2,339,683	6·3
Austria	22,144	429,000	1·9	890,207	4·0
Belgium	5,520	167,000	3·0	498,100	9·0
India	253,891	3,293,000	1·3	2,801,595	1·1
Totals	431,313	7,022,229	1·6	12,957,379	3·0

Country.	Commercial Class.		Industrial Class.		Agricultural Class.	
	Total Number.	Per Cent. of Total Population.	Total Number.	Per Cent of Total Population.	Total Number.	Per Cent. of Total Population.
England and Wales	980,128	3·7	6,373,367	24·5	1,383,184	5·3
Scotland	132,126	3·5	932,653	24·4	269,537	7·0
Ireland	72,245	1·4	691,509	13·3	997,956	19·0
United Kingdom	1,184,499	3·3	7,997,529	23·0	2,650,677	7·5
,, States	1,810,256	3·6	2,837,112	7·6	7,670,493	15·3
Prussia	911,706	3·3	3,650,326	13·0	4,692,348	17·0
France	1,573,000	4·2	4,465,000	12·0	6,632,200	18·0
Austria	451,000	2·0	2,279,000	10·0	6,155,000	28·0
Belgium	244,247	4·4	952,947	17·2	807,464	14·6
India	3,679,000	1·4	33,741,000	14·6	71,198,000	28·0
Totals	9,853,708	2·3	56,922,914	13·2	99,806,182	23·1

Discussion *on* Mr. Jeans's Paper.

The President suggested that it would be well if the discussion were directed to some definite objects pointed out in the recapitulation in the paper, especially as Mr. Jeans did not read it. Four points especially presented themselves for notice. In the fourth, fifth, and sixth articles of the recapitulation the question was raised as to the rates of wages in different countries; in the seventh the average annual earnings of our labouring population; in the eighth the increase in recent periods, and in the thirteenth the cost of living.

Mr. George Howell, after thanking Mr. Jeans for the very fair and candid manner in which he had grappled with the labour question, said that the facts and figures he had brought together were well worthy of attention. As a rule he did not agree with those who were in the habit of seeking averages with regard to wages. The average was generally placed too high, and certain circumstances were not sufficiently taken into consideration, and he was not quite sure that the author of the paper had not done the same thing. With regard to the proportionate increase of wages, he could state with confidence that the time lost perforce among the working classes of this country was greater now than it was twenty, thirty, or fifty years ago; not because of any fault of their own, but because of the number of holidays that had been established, and the fluctuations in trade. There was another factor which must be taken into account, and that was that the age at which men were dispensed with by their employers was being pressed more and more downward; until those who had a streak of grey hair on their heads were refused, and younger men were set to work. This would affect the average amount of wages earned from year to year, and drive a number of elderly men back upon their trade and benefit societies for subsistence. Latterly he had sent out a number of letters to men connected with some of the larger organisations in the country, and in every case the replies had confirmed his prior convictions. With regard to the cost of living, he thought the proportion set down in the paper for rent was a low one, as sufficient account had not been taken of the taxation in this country as compared with that in other countries. The local taxation would generally be found to be not less than one-fifth of the rental, while very frequently it amounted to one-fourth. The rent ought therefore to be increased by that amount. Although in the towns many of the artizans and labourers might live in lodgings, yet the price of lodgings was raised in exactly the same proportion as the house rent with the taxation added. Speaking generally, with regard to the tone of the paper, there was a very marked difference in the manner in which industrial subjects were now dealt with, from that which prevailed a few

years ago. It was beginning to be considered worth our while as a nation to pay some attention to the actual condition of the working population. He joined with Mr. Jeans in regretting that the English Government could not afford to pay for the collection of statistics relating to labour. It was a disgrace to the country, spending from 80 million to 85 million pounds a year, that it did not possess a bureau of statistics of labour, for Englishmen were now obliged to go to foreign countries for the most elaborate reports on this subject. More than twenty years ago he submitted to some of the members of the then existing Government a proposal with regard to this matter, and he had never ceased to press it more or less in the interval. Most of the statistics furnished by the Government, even those in the miscellaneous statistics, were very inadequate indeed. Surely it ought to be worth the while of "a nation of shopkeepers," a nation almost entirely dependent upon her artizans, to furnish the best and truest information with regard to the condition of workers in other countries. He could not say whether the Government were afraid that a greater number would be drafted off to other countries if the real state of things were known, he could not say, but such a feeling might exist among certain of the employers. It would be a good thing for our artizans if they could realise what underlay the fact of the difference between the wages of the labouring classes in America and in England. The larger the amount of wage earned by the industrial population of a country the greater would be its consumptive powers. America was able to maintain itself, and to rest almost entirely upon its own consumption, but where would England be in six months if the exports were entirely stopped? She would become bankrupt, and her industrial population would be in absolute poverty. If the wages of the wage-earning classes could be increased 20, 40, 60, or 100 per cent. throughout the country, though he could not suggest how that could be done—there indeed was the practical difficulty—they would have a proportionately increased purchasing power that would be equivalent to an immense foreign trade, and therefore he contended that the great difficulty was not so much over-production as under-consumption among the mass of the population.

Mr. Cornelius Walford thought that if the rate of wages was increased in anything like the proportion suggested by the last speaker, the export trade of the country would disappear for ever, because every other country would be able successfully to compete with us. If the rate of wages was to be increased at all, the increase must extend to all the wage-earning classes; and if a carpenter with 5*s.* a week more had to pay an additional 5*s.* to the shoemaker, in what way would his condition be improved? He had for many years made the rate of wages in America a subject of special attention. It was higher than in England, but did it follow that the working classes were better off there than in this country? Some years ago, when the price of provisions was very low indeed, the working classes were better off there, but at the present time they were not, and the fact that thousands were now

coming back to England was some argument in that direction. As a whole the condition of the working classes in America might be better than in England, but there was a reason for that other than the rate of wages. In the neighbourhood of Philadelphia and other large towns there were miles of beautiful cottages owned by working men, and possession of them was obtained by means which were open to the working men of this country, namely, through building societies, and by not spending one-quarter or one-third of their income in beer and tobacco. Whenever the time arrived that the working classes in England became really frugal, intelligent, and self-elevating, then not only would they be better off, but trade would be made so much more secure. He had lately visited some of the largest steel works in America, and one of the first things that struck him was the small number of hands at work on the operations as compared with those in the works at Sheffield and other districts. Nearly all the work done by hand labour at the iron and steel furnaces in this country was done by machinery in America. A man stood on an elevated platform in the corner of a workshop, and by means of a series of levers put into force machinery which produced the required result more quickly and effectually than hand labour in England. He had seen ingots of steel poured out, carried on to the different rollers, and lifted on the rollers by the one man who directed the force from the corner of the shop. Although each workman there might obtain 50 per cent. more wages than he would in this country, still if only half the men were employed there would be 25 per cent. at least in favour of the manufacturer. It had been stated in the paper that English earthworkers were very much superior in almost every respect, physically especially, to those of any other country; but perhaps it had been overlooked that the Italians and the Chinese were now rivalling us in that class of work. In making the Mont Cenis and St. Gothard tunnels the Italians proved themselves quite equal to the English navvy, and at the present moment the works at Forth Bridge were being carried out by Italians, not altogether on account of their physical excellence in labour, but because of their superior knowledge of scientific appliances. The Union Pacific Railway would never have been built but for Chinese labour. Although the Chinamen were not physically as strong as English navvies, yet by their intelligence and industry they managed to get through quite as much work. There must be some slight mistake in the paper with regard to the statistics of the unproductive classes in America; but he thought he could see how the mistake arose. While in this country a very large proportion of the daughters of labourers went out to service or worked in cotton mills, in America it was not the custom for even working men to send their daughters out to work; and out in the West, away from towns, the females had no means of employment. If the circumstances were equal, and towns only were included, he thought there would be very little difference between the unproductive classes in America and in England.

Mr. H. Moncreiff Paul said that Mr. Jeans, in his introductory

remarks, had thoroughly recognised the difficulties attendant on the comparison of the efficiency and earnings of labour at home and abroad; just as no precise comparison could be made between the earnings of any one of the operative classes now and fifty years ago, by reason of the fact that, for example, the blacksmith of to-day does not do exactly the same work as the blacksmith did then; so in the present time the labour performed in different countries, although nominally the same, is not so in reality. Agriculturists, for instance, in America did different work from agriculturists in Germany or England, and therefore it was very difficult to compare their respective earning powers. Speaking from personal observation, he differed from Mr. Walford with regard to the efficiency of Chinese labour. At the gold mines in Australia Chinamen had to work for seven days in the week, ten, twelve, or fourteen hours a-day, without turning out so much work as Englishmen did in six days of eight or nine hours each. This was the case, notwithstanding the assiduity, patience, industry, and temperance of the Chinamen. These qualities were prominently exhibited by the fact that in parts of the gold fields which had been abandoned by Europeans, Chinamen not only contrived to make a living, but to save money. This, too, showed the difficulty of comparing the efficiency and the earning power of different nations even over the same work. Mr. Walford had pertinently called attention to the fact that where labour was dear and wages high, the tendency was to economise it by means of machinery. As an example of this he had cited the application of machinery to steel works in the United States, and the same thing was observable in connection with agricultural operations in that great centre of grain production. Mr. Jeans's remark that climatic conditions affected the power of labour was a very important one, for in a dry climate men worked more assiduously, and apparently with less effort, than in a moist one, although in reality they taxed their powers more severely. He rather joined issue with Mr. Jeans in his views with respect to the woollen and worsted manufactures in one particular. It was perfectly true that labour in France was cheaper than in this country, and the result had been that many of our manufacturers in Yorkshire opened establishments in France for the purpose of carrying on their business there more economically than they could in England. But Germany was now beginning to go ahead of France. Official statistics to show this were not yet issued, but in a little while it would be found that in Germany, as regards woollen manufactures, the power of production was surpassing the production in France. The paper referred to the discoveries of gold in California and Australia adding to the earnings of the people by increasing the supplies of the precious metals; but there was another phase of that question. These gold discoveries stimulated emigration all the world over while the fever lasted, and in proportion as it did so, raised the wages in the countries from which the emigrants started. The gold fields also caused a great rise in the value of all commodities in their immediate neighbourhood; but, unfortunately, where wages rose suddenly, waste increased also, of which many instances could be

cited on the gold fields of Australia. In Appendix II he submitted there was a slight mistake with regard to the earnings of the various labouring classes in Australia. The weekly wages of farm labourers were put at 24*s*., and of town labourers at 45*s*., but the former had their rations found for them, while in the latter, in common with all the other occupations named in the table, the operatives had, speaking popularly, "to find themselves." This being so, the weekly average of the whole would be slightly affected, and the table would require modification accordingly. There were certain special considerations in France which led to the rise in wages between 1860 and 1880. Mr. Jeans seemed to think that it was rather a staggerer to free traders that this should occur in a quasi-protectionist country; but it was well known that the late Emperor Napoleon pressed forward public works both in Paris and throughout France, and the price of labour increased accordingly. Then the increase in the population of France was very slight as compared with that of many European countries, and therefore the proportion of labourers did not increase as it did elsewhere. There was also a great loss of men during the Franco-Prussian war, which diminished the working power; and as an outcome of the communistic elements after the close of the war, a good deal of compulsory emigration ensued. It was perfectly true, as stated in the paper, that American wheat might now be bought in England at a price below the proper cost of production, but that was not altogether the result of our insular position, because the same observation would apply to France or Germany. To a great extent it was the result of the establishment of telegraphic communication, the tendency of which was to make the price of any commodity at the point of production as high, if not higher, than that ruling at the centre of consumption.

Mr. Walter Peace wished to ask Mr. Jeans whether in his comparison of the averages of wages as paid in this country and in some colonies, he had estimated the hours of labour. As a matter of fact the payment in the colonies was given as 77 per cent. more than in this country, but it should also be remembered that the hours of labour were 20 per cent. less. A day's work in this country was on the average ten hours, in a colony it was eight hours, and that of course would affect the statistics.

Mr. George Hurst questioned very much whether the statistics given in the paper could possibly be relied upon. People who made returns as to the wages they paid, very often did so inaccurately. He had known it done with regard to agriculturists, and manufacturers frequently spoke of the maximum wages, and kept the average altogether out of sight. The fact must also be taken into consideration that during the last few years a reaction had taken place so far as agricultural labourers were concerned. The ordinary agricultural labourer's wages were spoken of as 14*s*., but at present it was reduced to 11*s*. The great loss of time by lack of employment must also be considered, for some large manufacturers, while keeping up their rate of wages, were working only

three-quarters or half time, and the actual earnings of the workmen were reduced in that proportion. The paper stated that a great deal of the price of cotton depended on the price of labour, but it also depended on the value put upon it by the manufacturer.

Mr. Benjamin Whitworth, M.P., said he did not think there was any improvement in steel manufacture in America which was not adopted in this country. Unfortunately he himself was engaged in the cotton trade, and he could say that for the last five or six years 2 per cent. per annum had not been made on the whole of the capital employed in this country in that trade. With regard to the rise in wages, for twenty years, from 1840 the average price paid for cutting cotton velvets was 6*s.* a piece, but during the last three or four years not a single piece could be done for less than 18*s.* He thought that Mr. Jeans had not taken into account the shorter hours of labour in this country; and to equalise the returns it would be necessary to add at least 20 per cent. to the wages of the English workmen. Mr. Howell had a very wrong impression about the present state of labour in America, and he did not believe that the wages of the artizan in America would buy the same amount of comforts and necessaries that the wages of a workman in England would buy, rent itself being 50 or 60 per cent. higher there than here, so that the 1*l.* that the English labourer earned would certainly go further than the 30*s.* or 35*s.* that he might earn in America. At the present time, owing to the great depression and the unsound system of protection, wages were more rapidly decreasing in America and France than in England. Unless there was an improvement in trade shortly, he believed wages would have to be reduced here, because all the losses now fell upon the employers and not upon the employed; each should bear a fair proportion of the burden.

Dr. G. B. Longstaff said that during the past summer he was surprised to hear on the Canadian Pacific Railway that the labour of the Englishman was considered inferior even to the Indian, the best labour being Swedish or Italian; the reason for the inferiority being that the Englishman was most discontented and most difficult to manage. When he asked if the Italian was really a first-class excavator and platelayer, the reply was: "No, not according to the old standard, but unfortunately we are not able to get anything in this country equal to the old English navvy; but of that labour which we can get access to, that which we have recently got from England is the worst."

Professor Leone Levi said that the paper displayed great power of research, and of digesting materials of much value. Mr. Jeans stated that for productiveness the British labourers were superior to those of most other countries, but he had only given instances where physical labour was mostly required. For mental power and fertility of invention, however, the French labourer would probably excel the British labourer, whilst moral qualities must be taken into account. Mr. Howell had said that there was much forced

suspension of labour in England, but what would he say about the voluntary absence from labour? St. Monday appeared to be an important institution in this country, and in some instances as many as 20 per cent. of the labourers had been reported to him to have absented themselves for no justifiable cause. In the economy of industry all were interdependent, and if one voluntarily absented himself others must suffer. Of course it was important to consider how much a person gave for the wages he received. Some years ago he was engaged in an inquiry on agricultural labour, and had to compare the earnings of the Devonshire labourer with those of the Northumbrian labourer. The former worked from about eight in the morning, after giving the freshest hours to his own allotment of land, to four or five in the afternoon, whereas the latter went to his work early in the morning and remained till late in the evening, so that the Devonian got 8*s.* or 9*s.* a week, and the Northumbrian 16*s.* or 17*s.*; the latter deserved the higher wages. He was disappointed to find that no comparison had been made of the taxation in different countries, for that bore very materially upon the cost of living, and he joined in the complaint that the Government did not give the statistics required for such inquiries. The miscellaneous statistics came out in a slovenly manner, the last giving the particulars down to 1880, and since then there had been a considerable reduction in the rate of wages. The miscellaneous statistics had also given the rate of wages upon different industries almost every year, so that they were scarcely comparable one with another. Upon the question of wages the late reports were therefore to a large extent valueless. He hoped that the Society would impress upon the Government the necessity of paying more attention to commercial and industrial statistics. It was much to be lamented that the last census was decidedly inferior to that of 1871 upon this point. One might almost desire that Dr. Farr would come again and give the impetus of his energy and zeal to the statistical department.

Mr. F. Debenham, referring to the large proportion of juvenile labour in America, said that something like three-quarters of that labour appeared to be employed in agriculture. As this question was intimately connected with education, it would be exceedingly interesting if Mr. Jeans could give some explanation of how—whether by some system of half-time or otherwise—so large a proportion of juvenile labour in the United States, where there was supposed to be a magnificent educational system, could be so employed.

Mr. H. D. Pochin desired to join Professor Levi and Mr. Howell in urging upon the Government the necessity of making public the truth with reference to these wage questions, for what a single individual could do towards obtaining such statistics was as nothing compared with what the Government might do. He did not believe that there was any desire to hide the facts of the case, but every department of Government had so much to do that unless a question of this kind was earnestly pressed upon them

from the outside there was little hope of improvement. He wished to protest against Mr. Howell's statement that no sooner did a man get a grey hair on his head than he was dismissed from his employment. There never was a time when such a proceeding was less the action of employers than at present. There was now greater consideration on the part of the master for his workman than in any past time, for all now knew that the interests of all classes were bound up together. Mr. Howell had also referred to *enforced* idleness, but the tendency on the part of the workmen to lesser hours of labour was never greater than in the present day. There was a difficulty in getting men to work not only on Monday, but also on Tuesday; and most manufacturers, particularly in busy times, were seriously inconvenienced because their men could not be induced to work with any degree of regularity. The difficulty of estimating the relative value of wages in different parts of the world was almost insuperable. The number of cold and wet days, even the constitution of different races of individuals, were important considerations. The spirit of the workman in the different workshops also affected the value of his work. Sometime ago he wanted a certain class of machine made, but he was told that they had better be obtained from America, because they could in that way be obtained more cheaply and of a better quality, as the American workmen would not tolerate bad workmen in their shops. The spirit in the English workshops was, as all knew, widely different to that. The legitimate way of increasing wages was that the workman should produce all that he himself consumed or its equivalent; then he might go on to produce more, and so add to the national wealth. If he did that he had a right to share that national wealth, and he was glad to believe that there was a natural law that secured to each worker a fair share in the wealth he produced. Unfortunately that law was, by restrictions, often prevented from working out its legitimate results.

Mr. R. Price-Williams entirely disagreed with the last speaker as to the want of spirit and educated skill of the English workman. Only on Saturday last, on going over the large locomotive works of Messrs. Beyer, Peacock, and Co., of Manchester, with Mr. Peacock, that gentleman pointed out an engine which he said had a remarkable history, which, in his, Mr. Price-Williams's, opinion, afforded a remarkable illustration of the great skill and unrivalled workmanship of the English mechanic. Mr. Peacock explained that some years ago he supplied some engines of this type for the Queensland railways. Complaints, however, reached him after a time that although the engines worked admirably themselves, they had a tendency to destroy the road; and, shortly afterwards, a pushing American locomotive builder who went there got an order to supply some locomotives, which are known in that country as of the Mogul type. The absence of any destructive effects upon the permanent way which resulted from the use of these Mogul engines was very marked, and further orders for them were given; but very soon grave complaints began to be made that these locomotives were all tumbling to pieces from bad workman-

ship, and the authorities again applied to Messrs. Beyer, Peacock, and Co., who, after investigating the matter and discovering the cause of the destructive effects of their engines upon the roads, modified their structure and design so as to obtain all the advantages of the Mogul engine, combined with the better workmanship and material of their own engine; the result being that the engine, of which this particular one was the type, was at once adopted, and that no complaint had ever been made since of these destructive effects upon the permanent way, and the American Mogul engine was fairly beaten out of the field. The fact must be admitted, in spite of what Mr. Pochin had said, that the high character and finish of the work of the English mechanic was still unrivalled throughout the world. The illustration Mr. Walford had given of the advantage which the Americans possessed in labour-saving appliances in manufacturing steel by the Bessemer process was singularly unfortunate, as those who, like himself and Mr. Jeans, had a practical knowledge of the manufactures knew very well that all these ingenious mechanical appliances were the invention of the great originator of the Bessemer process, and had largely contributed to its success.

Mr. William Miller having made a few remarks,

Mr. J. B. Martin drew attention to the fact that though the paper mentioned the discoveries of gold in California and Australia as having secured a greater abundance of the precious metals to all civilised nations, there was a large school of economists, with Mr. Göschen at their head, who held a direct contrary theory, and the late President of the Society held the same view. The purchasing power of gold was an important factor in the relative prosperity of nations. When he was in Montreal this year, he asked the Economic Section, when the vastly higher rate of wages in Canada as compared with England was spoken of, how it was that he had to pay ten cents for having his boots blacked, and five cents for a penny newspaper. He had not at the time had any direct answer to his question, but when on his return to England he had found on board the "Germanic" 200 steerage passengers, and when he read in the "Times" of the day on which he landed at Liverpool that the emigration for the first nine months of 1884 to Canada and the United States had fallen off in each case to the extent of 25 per cent. as compared with the corresponding period of 1883, he had thought that his inquiry was in some measure answered, that the effective purchasing power of wages was not by any means greater or less as the wages themselves might appear to be on paper.

Mr. Jeans, in replying, said he would not detain the meeting at any length after so full a discussion, and considering the lateness of the hour. Replying to Professor Levi, he had not referred to the subject of comparative taxation in different countries because his opinion was that his paper had already run to an inordinate length. He might, however, state that he had prepared a table

showing the amount of imperial taxation per head in the chief countries of the world, from which it appeared that England was the most heavily taxed, with the single exception of France, our total imperial and local taxation together being between 3*l.* and 4*l.* per head of the population. The taxation of the United States for imperial purposes was comparatively small, because there was no standing army to maintain worth speaking of. One or two speakers had rather extolled the progress made in textile industries in Germany at the expense of this country. He had not referred to the textile industries of Germany in his paper because he could not possibly cover the whole ground; but he might mention that an article which appeared in the "Times" some years ago stated, on the authority of figures supplied by Dr. de Leeuw, of Berlin, that in Saxony it required 5·9 hands to work 1,000 spindles, whereas the same work was done in England with 3·1 hands; the effect being that a factory with, say, 64,000 spindles could afford to pay English workers 16*s.* 10*d.* per week, against 11*s.* 10*d.* per week to Saxon workers, and still have an excess profit of 3,200*l.* a-year, notwithstanding the sufficiently well known fact that in Saxony longer hours were worked. As had been very properly remarked, the hours of work in different countries had a very important bearing on the labour question, but time did not allow of his pursuing the investigation so far. Briefly, however, he might state that in this country the hours of labour were shorter than in any other of which industrial returns were procurable, not even excepting the United States. He could not quite assign the reasons why juvenile labour was employed so much more largely in the United States than in our own country, but it was unfortunately the fact that large numbers were employed in the factories there under 10 years of age.

A cordial vote of thanks was given to Mr. Jeans for his paper.

MISCELLANEA.

CONTENTS :

	PAGE
I.—The Agricultural Returns for the Year 1884	666
II.—Savings Banks Statistics	691
III.—Industrial Remuneration Conference	694
IV.—The forthcoming Celebration of the Society's Jubilee	695
V—Quarterly List of Additions to the Library	696

I.—*The Agricultural Returns for the Year* 1884.

The following report of the Agricultural Department of the Privy Council on the "Agricultural Returns of Great Britain, with Abstract Returns for the United Kingdom, British Possessions, and Foreign Countries," for the year 1884, is given (with summary tables as before) in continuation of a series of similar notices to be found in the Society's *Journal* for previous years :—

"The following report and accompanying tables contain the information, usually comprised in the agricultural returns of Great Britain, for the year 1884, with summary returns for Ireland for the same year. The details for Great Britain have been collected as in previous years by the officers of the inland revenue, while those for Ireland have been supplied to the agricultural department by the registrar-general for Ireland. The particulars for the Isle of Man and the Channel Islands, which are included in the general totals, have been collected by officers under the direction of the respective governors of those districts. The date for which the returns in Great Britain, the Isle of Man, and the Channel Islands were directed to be obtained was the 4th of June, and a summary, subject as usual to corrections in the completed returns, was issued to the London newspapers on the 18th of August.

"The number of separate returns furnished by occupiers of land in Great Britain, and of those, where occupiers have omitted to make returns, obtained by estimates, have been this year 556,415 and 4,935 from owners of live stock only, thus showing an increase of 1,857 in the case of occupiers of land and of 93 in the case of owners of stock.

"The extent to which farmers in Great Britain have assisted the Government by making actual returns is somewhat greater than in the previous year, while the returns obtained by estimate show but a slight increase, the number being 16,012 as compared with 15,970 in 1883.

"The area of the land for which returns were not made, and which therefore became the subject of estimate, was this year 1,470,000 acres, compared with 1,427,000 in 1883, and 1,453,000 in 1882. Of this area the larger quantity, in 1884 about 96 per cent.,

is in England, the estimated acreage in Scotland being only $3\frac{1}{2}$ per cent. Moreover it again appears that in England the occupiers who neglect to make returns belong to a class of men farming on a larger scale than those who fail to furnish returns in Scotland and Wales. In England the average acreage of those for whom estimates are made is this year $131\frac{1}{2}$ acres, in Wales 67, and in Scotland 10 acres only.

"Notwithstanding the statement on the forms that the information is considered confidential in respect of individual returns and cannot be used injuriously to those who contribute it, the number who omit to furnish returns continues larger than it should be. Even where no opposition is intended, delay in furnishing the particulars sometimes prevents the officers from tabulating the parish and district returns, and thus compels them to make an estimate.

"An abstract table taken from the returns of the last two years is issued with the forms, in order that the attention of farmers may be drawn to the statistics compiled by their assistance, and that they may be thus further induced to complete them.

"The subdivision of land continues to be noticed by the collectors in several counties as one of the chief causes for the increase in the number of occupiers, newly reclaimed land in particular being frequently let to small occupiers. Some allowance must, however, be made, as heretofore, for cases in which those who have several holdings make one or more returns at their convenience, and in certain districts it is stated that the number of separate returns made by such occupiers has been greater than usual. On the other hand, changes of occupancy, and farms which remain unlet and are returned by their owners, and the consolidation of small farms with larger ones, are again said to have reduced the number in other localities.

"Of the returns which have been obtained the following appear to be the general results:—The total extent of land returned in 1884 as under cultivation of all kinds of crops, bare fallow, and grass, amounted for Great Britain to 32,465,000 acres, exclusive of heath and mountain pasture land and of woods and plantations, thus showing an increase over the previous year of about 81,000 acres. This increase, which is again chiefly in permanent pasture, is spread over each division of Great Britain, and gives to England an additional cultivated area of 49,400 acres; to Wales 9,550 acres; and to Scotland 21,750 acres. The greater portion of this additional acreage consists of extensive tracts of land gradually reclaimed and brought into cultivation in the outlying districts of the country, many instances of which are especially noticed by the inland revenue officers as having occurred during the past year. The variations in certain counties are remarkable, and are in some instances explained as being due to more correct returns, but in others to the omission of considerable quantities of land in some districts in previous years. Errors in one or two counties arising from the use of Cheshire and Scotch acres as measures instead of imperial statute acres have been discovered and rectified, as well as others due to land now returned by occupiers, for which

estimates were previously made. There are again, also, the changes to which reference has been made in former reports, attributed to land being required for railways or appropriated to building purposes near towns, besides others traceable to farms which have been previously returned in adjoining counties instead of in the county in which the land is situate.

"Looking at the details in the acreage of the different crops in Great Britain it is found, as regards corn crops, that compared with 1883 there is an increase in the area under wheat and a decrease in that under barley and oats, the changes in these crops being in the opposite direction to that of the preceding year. The total area returned under wheat is this year 2,677,000 acres, an increase of nearly 64,000 acres, or 2·4 per cent. over that of the area of 1883, which was then remarked upon as being the smallest recorded since the returns were first obtained in 1866, and it is worthy of note that the present year's crop has been grown on nearly a million acres less than that of 1874.

"The autumn of 1883, unlike that of the preceding year, which was an exceptionally unfavourable seed time, is reported by the collectors generally to have been so good as to have enabled an unusually large proportion of the wheat area to be sown, leaving less over for spring sowing, and an increased acreage appears therefore to have been anticipated. The increase shown, however, may perhaps hardly have realised the expectations entertained, but there can be now no doubt that the fine weather with which the country has been favoured, has greatly augmented the yield per acre of this crop, and it appears probable that its quality and condition at harvest will go far towards improving the aggregate result.

"As regards barley, the area in 1884 was 2,168,000 acres, a decrease of 123,000 acres or 5·4 per cent. from last year, and the smallest area since 1868. Oats covered 2,915,000 acres, showing a decrease of 60,000 acres, or 2·0 per cent. less than in 1883; the breadth sown, however, under this crop being above that of any other year recorded since these returns have been obtained.

"The large importations of foreign barley and oats and the low prices obtainable are stated to have influenced the acreage under both these crops during the past year. In certain counties the decreased area is ascribed by the officers to the number of farms at present in the hands of owners who lay nearly the whole of their land down in grass, but more generally it is explained, as being due to the tendency which prevails among farmers towards the rearing and grazing of stock.

"Among minor corn crops, rye was sown on 3,700 acres less than in 1883. Beans and peas show but little variation.

"Taking then all the figures as to corn crops in Great Britain we find their total area was 8,484,700 acres, a decrease of 133,900 acres, or 1·5 per cent. from that of 1883, and 946,700 acres, or 10·0 per cent. less than in 1874, when corn crops occupied no less than 9,431,400 acres.

"Of the area under green crops in Great Britain in 1884 about 565,000 acres were planted with potatoes. This acreage is greater

than that of 1883 by 21,600 acres, and has only been once exceeded since the agricultural returns were obtained, namely, in 1881, when it reached 579,000 acres. Allowing for the moderate acreage planted with potatoes in Wales it appears that about two-thirds of the crop is grown in England and nearly one-third in Scotland.

"Turnips and swedes were sown in Great Britain on 2,027,600 acres as compared with 2,028,900 in 1883. This unimportant decrease is ascribed to ordinary variations incidental to the system of rotation cropping, and calls for no special comment. It is to be feared, however, that the dryness of the spring and summer, so favourable to the yield of wheat, will have lessened the produce of these and some of the other green crops. For mangold the acreage was less than last year by 2,500 acres, but vetches, lucerne, and other green crops unenumerated, have increased by 14,000 acres. Sugar beet which comes under this heading is returned as occupying 812 acres, of which 643 are in Suffolk, where, for some time, its cultivation had been discontinued. A beet sugar factory has, it is stated, been established at Lavenham.

"Altogether the total area of green crops was 3,487,700 acres, an increase of 33,000 acres over last year's figures.

"The growth of flax is still diminishing, the acreage having been only 2,200 acres against 4,300 acres in 1883 and less than a fourth of its area in 1874. It is stated to be a difficult crop to secure and to have failed in 1883.

"Extension of the cultivation of hops in England has been maintained, there appearing a further increase of 1,200 acres in 1884, although the area of hop plantations has not yet regained the acreage of the three years 1876-78. There were 69,258 acres under hops in 1884 as compared with 68,016 acres in the preceding year. The imports of hops which considerably declined in 1883 from the large quantity imported in 1882, have, however, again increased during the first eight months of this year, the imports thus far being in excess of those of 1882.

"The quantity of land annually left in bare fallow necessarily varies greatly according to the weather at the sowing season, and the result is seen in a further decrease in Great Britain from 778,000 acres in 1883 to 749,000 acres in 1884. It has however increased in Scotland by 6,600 acres, an extraordinary increase being returned in the county of Sutherland, owing to extensive reclamation of waste land, intended for farming but not under cultivation at the period of collection.

"Clover, sainfoin, and grasses under rotation covered 4,381,000 acres or 14,500 acres less than in 1883, only such a variation as is common. The extension of permanent pasture is again remarkable, amounting to an increase of 225,000 acres over 1883, and bringing the total area up to 15,290,000 acres. The area under arable land on the other hand is this year less by 144,000 acres, about 17,175,000 acres being returned as compared with 17,319,000 acres in 1883. The relative proportions of the whole area of cultivated land in Great Britain are this year 47·1 per cent. under permanent pasture, 26·1 per cent. under corn crops, and 10·8 per cent. under green crops. The continued decrease of arable land and increase

in permanent pasture is again referred to by the collectors as being due not alone to the laying down in grass of land newly reclaimed and enclosed in various districts, but in great measure also to the transition from one system of farming to another that has been gradually taking place. The low prices of corn, and the more remunerative character of stock farming insisted on in the present day by those best qualified to judge of the question, appear to render it matter for congratulation rather than otherwise that acquiescence in the altered conditions of farming seems to be gaining ground, more especially when the great interest which the people of this country have in increased home production of meat is borne in mind.

"Orchards in Great Britain again show an enlarged area, covering 194,648 acres as compared with 190,710 acres in the previous year. In the county of Somerset, and in one or two others in less degree, the apparent increased acreage is partly attributable to more complete returns. The exclusion of land planted with fruit trees, but returned under another classification, is doubtless an occasional cause of fluctuation in the returns, and one which not unfrequently can only be discovered by personal communications with the occupier.

"The acreage under market gardens shows a decrease in the total of 94 acres, but this is due chiefly to the fact that upon inquiry it was found that a large quantity of land in Essex which was occupied last year by peas and potatoes, and which in any following years might be under wheat or other crops, was erroneously returned in 1883 as market gardens, instead of being enumerated under the proper classification in the returns. The collectors report indeed, generally, in reference to both orchards and market gardens a considerable extension, and that in some localities every available plot of land is being devoted to the purpose, in order to meet the continued demand for fruit and fresh vegetables for large towns. Were it not for the apparent diminution here alluded to, the returns would have shown an increase in the area under market gardens of 3,500 acres. Occasionally, indeed, portions of land appear to have been subdivided specially for these purposes.

"As the extent of woods and plantations does not vary greatly from year to year, annual returns are not obtained for land so occupied, and the acreage as ascertained in 1881 has therefore again been inserted for Great Britain in 1884.

"Taking now the various kinds of live stock in Great Britain for the year 1884, the facts specially noteworthy are a large increase in cattle, sheep, and lambs, and a small decrease in the number of pigs. There appears to be also a decline of 4,600 in the number of agricultural horses, caused, it is stated, by the altered system of farming; namely, the more general use of agricultural machinery, and the continued conversion of arable land to the purposes of rearing cattle and sheep. This deficiency is, however, more than counterbalanced by an increase of 8,300 unbroken horses and mares returned as kept for breeding, a class to which farmers are said to be turning their attention lately on account of

the high prices obtainable. So far as relates to the trade in horses between the United Kingdom and foreign countries more horses have lately been imported than exported. In 1883 foreign horses to the number of 10,409 were imported, against 7,376 English horses exported, and in the first eight months of the present year the numbers were 9,545 imported, compared with 5,172 exported.

"As regards horned cattle there is again in Great Britain a satisfactory increase in each of the several classes, the total number being now 6,269,141, or 306,362 more than in 1883, and the largest aggregate figures for cattle recorded since the returns were obtained. Milch cows in Great Britain have increased in number by 3·7 per cent., cattle more than milch cows of two years of age and above number 1·3 per cent. more, and young cattle have increased by 8·9 per cent.

"The attention now paid to dairy farming for the supply of milk and other produce to large towns, and the preference evinced by farmers for rearing young stock, are noticed as respectively contributing to the increase in the two classes of milking cows and young cattle, more of the latter having been bred last year, when breeding is said to have paid better than buying store cattle, which commanded high prices. The efforts now generally being made to bring young stock to maturity at as early a date as possible appear to show also that the supply of other cattle is still only at the level of demand. The increase in young cattle and the larger supplies of live cattle and meat from abroad confirm this view. The imports of store cattle from Ireland, which in 1882 numbered 427,798, fell in 1883 to 278,518.

"In sheep and lambs there is also in Great Britain the substantial addition of a million, of which sheep of one year and above contribute an increase of 436,200, and sheep under one year 563,800 head, the total number being now 26,068,354. The mild winter and abundant keep, followed by a favourable lambing season, are again put forward by the collecting officers as fully explaining the increase. The few exceptions, mainly in Scotland, appear to be due to local causes. 'Sheep rot' (or liver rot) is mentioned as having diminished the numbers in one or two districts only.

"There is a small decline of 33,000 in the number of pigs in Great Britain. In some instances it is said that the larger importations of bacon and hams in 1883, and low prices consequent thereon, have somewhat discouraged the production of pork. Ireland, however, sent us fewer pigs by 41,800 in 1883, owing probably to the prevalence of foot-and-mouth disease, and this deficiency would alone fully account for the slight decrease in Great Britain. It may be further observed that the numbers of the present census have but rarely been exceeded. Swine fever, although less prevalent than in the previous year, is stated to have diminished the number kept in a few districts.

The number of poultry in Great Britain, as returned in 1884, exclusive of those kept in towns or by cottagers with less than a quarter of an acre of land, has been inserted for the first time in the tables, but it appears probable that for some counties the figures are this year only approximate.

"Returns of the different kinds of poultry in Ireland have been annually published since 1876. The returns now furnished show a total number of poultry of all kinds in Great Britain of 16,061,012. It will be observed that according to the returns the total number of poultry in Ireland is greater than in England, being 12,746,048 in the former country against 12,384,858 in the latter, an excess of 361,190. This is the more remarkable as in each of the last two years there has been a considerable decrease in the number of Irish poultry from the year 1882, when it amounted to 13,999,096, representing an estimated value of 1,138,931*l.* It is also to be noticed that Table XX, Group 2, appended to this report, shows that we imported last year a large amount of poultry from foreign countries, besides 940,436,160 eggs, valued at 2,732,055*l.* The apparent superiority of Ireland over England shown in the returns of the total number of poultry is to be in part accounted for by the Irish returns embracing poultry kept by occupiers of all holdings, however small, even garden crops being entered in the schedules, whereas the returns for Great Britain do not include these details. Moreover, it appears, from the collectors' reports, that it has been sometimes impracticable, in certain districts, to procure the information in respect to poultry, that has this year been asked of those occupiers from whom returns are obtained in Great Britain. This difficulty will, however, no doubt, disappear, as other obstacles have in previous years, when farmers become better aware of the interest taken in these agricultural statistics.

It is satisfactory to find that the year's progress with respect to live stock has, owing doubtless in great part to the propitious seasons with which the country has been favoured, fully borne out the promise in last year's returns, notwithstanding the prevalence of disease during the autumn and winter of 1883, and the diminished supplies, due thereto, of cattle, sheep, and pigs from Ireland, which the large imports from abroad were not sufficient to outweigh.

"It should be remembered, however, that the comparison as regards sheep is made with numbers that were last year still relatively low when compared with the average of a series of years prior to 1880. But, on the other hand, there is the fact, above adverted to, to be allowed for, that the imports of sheep into Great Britain from Ireland largely declined during 1883, a circumstance which would probably somewhat affect the numbers that might otherwise have been brought into the returns this year in June. Nevertheless, although the tendency towards the production of both cattle and sheep is so frequently referred to by the collectors, it cannot be overlooked that the increase in this description of stock does not appear, in spite of the stimulus of alluring prices, to have kept pace with the constant addition to pasture land, and that the demands of consumers have been to a large extent met by increased importations of cattle and sheep within the last six years. The reason that breeding has not hitherto advanced more rapidly may, perhaps, be found in the diminished means of those engaged in agriculture owing to the losses of recent years, although the officers notice in some counties that a better and more prosperous

tone is to be observed than has been the case for some considerable period.

"Turning now to the figures of the crops and live stock in Ireland we find in some respects very similar changes.

"The total cultivated area has increased, being now 15,242,837 acres as compared with 15,151,230 acres in 1883, and 15,212,390 in 1882. Corn crops, green crops, and flax show a decrease. As regards corn crops, there appears a diminution of 25,700 acres or 27·3 per cent. in the acreage under wheat which was sown only on 69,000 acres against 94,000 acres in 1883. Barley shows a decline from 184,000 acres to 167,000 acres, and oats, the most important crop, were less by 33,000 acres, the area being now 1,347,000 acres against 1,381,000 acres in the preceding year. Beans and peas decreased by 2,400 acres, and rye by 100, showing a total diminution of 79,000 acres, or nearly 5 per cent. in the area under cereal crops. The area under potatoes which covered 806,000 acres in 1883 was reduced by 7,700 in 1884. Turnips were less by 2,700 acres, and mangold and beet root by 3,400 acres. The land under cabbage increased by 3,800 acres, and that under other green crops by 1,400 acres, leaving a net decrease of about 8,800 acres under these crops.

"The area under flax in 1883 was 95,900 acres. In 1884, 89,200 acres were returned, a decrease of 6,700 acres.

"The land returned under bare fallow was less by 1,100 acres.

"Clover, sanfoin, and rotation grasses show an increase from 1,931,000 acres in 1883 to 1,962,000 acres in 1884, and permanent pasture an increase of 155,000 acres, the area of the latter being now 10,346,000, against 10,191,000 in 1883.

"In the returns of live stock, horses numbered 480,846, or 1,934 more than 1883. Milch cows and heifers show a decrease of 45,217, or 3·2 per cent. from 1883; young cattle have increased by 1,794, and other cattle of two years of age and above have exceeded the number in 1883 by 59,669, or 6·9 per cent., thus making the total number of cattle 4,112,267, and showing an increase of 16,246 above that of last year.

"Sheep and lambs taken together exhibit an increase, the total numbering now 3,243,572, or 24,474 over 1883, the number of sheep being 2,027,072, and of lambs 1,216,500.

"Pigs on the other hand have again fallen in number, and are fewer by 45,795 or 3·4 per cent. than in the preceding year, the total being now 1,306,195.

"Summing up, then, the figures for the whole of the United Kingdom, including the Isle of Man and the Channel Islands, the variation is important as regards the total cultivated area which has increased by 173,000 acres. Corn crops have a less acreage, while green crops have a larger one. Rotation grasses show comparatively little change, but in permanent pasture there is a remarkable increase, again due to additions in each division of the United Kingdom.

"Cattle and sheep have substantially increased, but in pigs there is a decrease both in Great Britain and in Ireland.

"The following table shows a comparison of the figures for the

United Kingdom, including the Isle of Man and the Channel Islands, between the years 1883 and 1884:

Acreage.	1884.	1883.	Increase (+) or Decrease (−).
	Acres.	Acres.	Acres.
Total cultivated area	47,840,977	47,667,274	+ 173,703
„ of corn crops	10,113,264	10,326,518	− 213,254
„ of green „	4,733,860	4,708,934	+ 24,926
„ of clover, &c.	6,392,402	6,371,799	+ 20,603
„ of permanent pasture	25,667,206	25,288,520	+ 378,686
„ of flax	91,444	100,262	− 8,818
„ of hops	69,259	68,016	+ 1,243
„ of bare fallow	773,542	803,225	− 29,683
Live Stock.	Nos.	Nos.	Nos.
Horses	1,904,515	1,898,745	− 5,770
Cattle	10,422,762	10,097,943	+ 324,819
Sheep	29,376,787	28,347,560	+ 1,029,227
Pigs	3,906,205	3,986,427	+ 80,222

"The usual table prepared for this report showing the relative course of agriculture in the counties of England, arranged in two divisions of chiefly grazing and chiefly corn-growing counties, has next to be noticed.

"The grazing or western division, it may be explained, includes twenty-one counties:—Chester, Cornwall, Cumberland, Derby, Devon, Dorset, Durham, Gloucester, Hereford, Lancaster, Leicester, Monmouth, Northumberland, Salop, Somerset, Stafford, Westmorland, Wilts, Worcester, York (North Riding), and York (West Riding).

"The corn or eastern division includes twenty-one counties:—Bedford, Berks, Bucks, Cambridge, Essex, Hants, Hertford, Huntingdon, Kent, Lincoln, Middlesex, Norfolk, Northampton, Nottingham, Oxford, Rutland, Suffolk, Surrey, Sussex, Warwick and York (East Riding).

"Although the number of the counties is the same in each of these groups the total acreage is larger in the grazing than in the corn division, in the ratio of 53 to 46 per cent. of the total acreage under crops and grass in England.

Acreage under Crops, and Number of Live Stock, in Grazing Counties and in Corn Counties of England, and Percentages of the Totals for England in Grazing and Corn Counties respectively in the Year 1884.

	In Grazing Counties.		In Corn Counties.	
	Acreage and Number.	Percentage of Total for England.	Acreage and Number.	Percentage of Total for England.
Total acreage returned under all kinds of crops, bare fallow, and grass	13,292,394	53·5	11,552,096	46·5
Acreage under—				
Wheat	850,679	33·6	1,680,032	66·4
Barley and bere	600,507	33·2	1,207,901	66·8
Oats	878,475	54·2	741,789	45·8
Rye	13,478	35·7	24,318	64·3
Beans	103,638	24·6	318,120	75·4
Peas	44,152	19·5	182,050	80·5
Total under above corn crops	2,490,929	37·5	4,154,210	62·5
Potatoes	203,963	56·7	156,062	43·3
Turnips and swedes	656,313	44·6	815,811	55·4
Mangold	89,491	28·0	229,888	72·0
Carrots	2,893	24·0	9,179	76·0
Cabbage, kohl-rabi, and rape	55,290	39·4	84,873	60·6
Vetches, lucerne, &c.	112,889	29·4	270,852	70·6
Clover and other grass under rotation	1,345,167	52·9	1,199,638	47·1
Total under above green crops and grass under rotation	2,466,006	47·1	2,766,303	52·9
Bare fallow	269,460	38·6	428,593	61·4
Permanent pasture	8,055,457	66·0	4,142,109	34·0
Flax	934	43·1	1,231	56·9
Hops	9,608	13·9	59,650	86·1
Orchards, &c.	141,127	74·4	48,630	25·6
Woods, &c.	761,892	52·0	704,146	48·0
Number of horses used solely for agriculture	372,077	48·0	402,716	52·0
Number of horses unbroken and mares for breeding	175,622	56·3	136,218	43·7
Number of cattle	2,902,852	65·2	1,548,806	34·8
„ sheep	8,661,161	52·7	7,766,903	47·3
„ pigs	1,057,988	47·9	1,149,456	52·1
„ turkeys	188,750	50·4	185,758	49·6
„ geese	434,765	69·5	191,111	30·5
„ ducks	1,011,857	53·6	875,832	46·4
„ fowls	5,200,328	54·8	4,296,457	45·2

Acreage of each Description of Crop in Grazing and Corn Counties of England, and Percentage of Total Cultivated Acreage in each Division under each Description of Crop in the Year 1884.

	In Grazing Counties.		In Corn Counties.	
	Acreage.	Percentage of Total Cultivated Acreage in the Division.	Acreage.	Percentage of Total Cultivated Acreage in the Division.
Acreage under—				
Corn crops	2,490,929	18·8	4,154,210	36·0
Green „	1,120,839	8·4	1,566,665	13·6
Clover and other grass under rotation	1,345,167	10·1	1,199,638	10·4
Bare fallow	269,460	2·0	428,593	3·7
Permanent pasture	8,055,457	60·6	4,142,109	35·8
Flax	934	0·0	1,231	0·0
Hops	9,608	0·1	59,650	0·5
Total	13,292,394	100·0	11,552,096	100·0

" On comparing the figures with those of the last year or two, the variation in the distribution of the crops between the two great divisions will be found to be very slight except in a few instances. Thus in the acreage under corn crops, the percentage proportion of the total for England in the grazing counties is now 37·5 against 37·7 last year, and 38·1 in 1882. Wheat is this year 33·6 in those counties compared with 33·9 in 1883 and 35·3 in 1882. In green crops in the grazing counties the total percentage proportion varies only from 47·3 in 1883 to 47·1 this year, the corresponding percentage in the corn counties being 52·9 this year against 52·7 in 1883.

" Potatoes have increased in the corn counties, the relative percentage being 43·3 against 42·2 in 1883 and 41·2 in 1882, while the percentage of cabbage, kohl rabi, and rape has decreased in those counties from 62·2 in 1883 to 60·6 in 1884. In bare fallow there is an increase in the corn counties, the percentage proportion being 61·4 against 61·0 in 1883. The decrease in flax is, as last year, chiefly in the corn counties.

" As regards live stock, there is again but little significant variation. Of cattle, the number in the grazing counties is 65·2 per cent. of the total and in the corn counties 34·8 per cent. The percentage proportions last year being 65·6 and 34·4.

" Of sheep, the number this year in the grazing counties is 52·7 of the total and in the corn counties 47·3 per cent., the percentages last year being 52·4 and 47·6. Of pigs, the variation in distribution is greater, the numbers this year in the grazing counties being 47·9 per cent. of the total and in the corn counties 52·1, the percentages last year being 49·0 and 51·0. At a later period of the year than that at which the returns are collected, the corn counties would probably have a larger proportion of both cattle and sheep.

" The distinguishing characteristics of the cultivation of the two

divisions show that in the corn counties 36 per cent. of the cultivated acreage in that division is now devoted to corn crops, and 35·8 to permanent pasture, while in the grazing counties the proportions are reversed, the acreage under corn crops being there only 18·8 of the cultivated area of the division, while the acreage of permanent pasture is 60·6 per cent. of that area.

"Comparing live stock with acreage in the three divisions of Great Britain the returns show that on the 4th June, 1884, the proportionate numbers of live stock to every 100 acres of cultivated land were in England of cattle 17·9 in 1884 against 17·0 in 1883, and of sheep 66·1 against 62·9 in the preceding year. In Wales the proportions were of cattle 24·2 against 23·3, and of sheep 94·6 in 1884 as compared with 92·2 in 1883, while in Scotland there were of cattle 23·6 in 1884 against 22·8 in 1883 and of sheep 145·1 in 1884 against 143·9 last year.

"The larger proportionate number of sheep in Scotland as compared with England and Wales is doubtless due to the extent of rough pasturage upon heath and mountain land which is not included in these returns under permanent pasture.

"Comparative tables have been included among these returns in conformity with the practice of the last five years, showing the imports of animals, of certain kinds of food, the prices of agricultural produce, information as to the imports into the United Kingdom of feeding stuffs and of manures, and other particulars for a series of years. These tables are in continuation of returns required from time to time to meet special demands, and will be found to contain particulars which it is considered will be of interest to agriculturists.

"To these have this year been added others showing the quantities of meat and other produce brought into the London central markets, with the average prices of live cattle, sheep, and pigs, and of meat sold wholesale by the carcase in London, Liverpool, and Glasgow, for each year over an extended period. A table showing the several countries whence the imports of fresh, salted, and otherwise preserved meat were derived during the year 1883 will also be found.

"With the view of affording information relating to the experiments which have up to the present time been made in this country with respect to ensilage, a return of the number of silos constructed in each county, with their total cubical capacity, and the average cubical capacity of each, has been inserted, which it may be practicable to supplement another year by a digest of the experience of agriculturists as to their success in use.

"Tables relating to the crops and live stock in British possessions and in foreign countries, which were re-introduced among last year's returns, are again included, and contain, through the courtesy of the officers of the Board of Trade who have supplied it, the latest official information in each case available. The most recent returns which have been received, showing the extent of the agricultural resources of the various British possessions in which agricultural statistics are annually published, are given after those of Great Britain.

"In respect to our dominions in India an official publication issued in October, 1879, of 'selections from the records of the Government of India (home, revenue and agricultural department), No. CXI of 1879,' stated that, in an ordinary year, taking as a basis the average for the years 1873 to 1878, the area under wheat and the total produce thereof, in round numbers, were for the undermentioned several provinces of British India as follows:— Madras, area 22,000 acres, estimated yield in quarters of 480 lbs., 22,000; Mysore, 12,500 acres, yield 6,800 quarters; Bengal, 1,100,000 acres, yield 1,650,000 quarters; Central Provinces, 3,515,800 acres, yield 3,515,800 quarters; Berar, 537,800 acres, yield 273,400 quarters; Bombay, 1,033,200 acres, yield 731,500 quarters; Sind, 340,300 acres, yield 462,100 quarters; Ajmere, 16,200 acres, yield 19,700 quarters; North-West Provinces and Oudh, 6,081,400 acres, yield 8,750,000 quarters; Punjab, 6,670,000 acres, yield 11,116,700 quarters; making up the respective totals of 19,329,200 acres, and 26,548,000 quarters, or about 5,688,800 tons. It would appear from this that of the countries whence our supplies of wheat are derived, India stands very high in point of total quantity of production. In the Central Provinces, the North-Western Provinces and Oudh, and the Punjab, the accepted average yields per acre stood in 1879 at 8 bushels, 11⅔ bushels, and 13⅓ bushels respectively.

"In a collection of correspondence during 1883, in continuation of the above-mentioned papers, it appears that requisitions from the Government were addressed to the directors of agriculture and commerce in the several provinces for information upon the wheat production and trade of India, the mode of culture pursued, its average yield and other particulars, with special instructions also to obtain from some of the provinces samples of wheat for milling experiments in order to test its relative weight, quality, and yield per bushel, as well as its food value compared with the grain of other countries. The results ascertained with representative kinds of Indian wheats appear to have placed its high standard in these respects beyond question. Comparative tables relating to these experiments are given.

"In reply to a communication addressed to the Government of India with the object of obtaining statistics respecting the wheat production in India of the current year, a memorandum on the wheat harvest of 1884, dated 8th August last, issued by the Revenue and Agricultural Department of India, has been received, stating that in a resolution of 10th March last the Government through that department attempted to determine the area ordinarily placed under wheat in British India and in native States, and to estimate the out-turn in an average year. 'The broad conclusions arrived at were that the total wheat area in India is about 26 million acres, of which about 20 million are in British India and 6 million in native States. The total yield in a fairly good year was put at 135 million cwts. or 30,500,000 quarters, giving an average out-turn of about 9⅓ bushels to the acre.' The information received from the chief wheat growing provinces as to the comparative area and out-turn of the crop of 1884 is thus summarised.

"In the Punjab the yield on the whole in 1884 may be estimated to be above the average. The average area under wheat is given in the resolution above quoted as 7 million acres, and the average yield 9,300,000 quarters. The yield of 1884 is put at 10 million quarters.

"In the North-Western Provinces and Oudh, which come next to the Punjab in respect of wheat area, the area in 1884 appears to be fully up to the average.

"Estimating the area at 6,200,000 acres, and allowing for indifferent crops in many districts owing to the deficiency of the autumn and winter rains, the out-turn for 1884 might be put at 7,500,000 quarters. The yield per acre in these provinces is probably larger in ordinary years than in the Punjab. In Bombay the yield per acre this year is reported to be generally above the average. The area ordinarily under wheat in this presidency is about 1,600,000 acres, and on this basis the probable yield for 1884 is 2 million quarters.

"In the Central Provinces the out-turn is estimated at fully 15 per cent. above the average. The acreage also was in excess of the average. This is put in the resolution referred to at 4 million acres, but the yield per acre is generally less than in northern India. Taking into account the excellent character of the harvest and breadth of land under the wheat crop, the produce in 1884 should not be less than 5 million quarters.

"It thus appears that the four provinces from which reports have been received, namely, the Punjab, the North-Western Provinces and Oudh, Bombay, and the Central Provinces, have an estimated average area respectively of 7 million acres, 6,200,000 acres, 1,600,000 acres, and 4 million acres, or a total area of 18,800,000 acres, and that the estimated yield amounts to a total of 24,500,000 quarters.

"Reports had not been received from Bengal, the Berars, or the wheat-growing native States of Rajputana and Central India, but enough is known to lead to the expectation that the total out-turn of India this year comes up to the average of 30,500,000 quarters. In the calendar year 1882, the export was 15 million cwts., equal to about 3,500,000 quarters, and in 1883, 22,333,333 cwts., equal to about 5,211,000 quarters, without any apparent effect in raising prices. It may therefore be inferred, it is added, that with a good rainy season following an average wheat crop, so as to secure the autumn harvest, at least one-fifth of the wheat harvest can be spared for export without materially enhancing prices.

"A report for the year 1883, presented by the Canadian Minister of Agriculture to the Dominion Parliament, states that a large increase in imports of pure bred cattle had taken place in 1883, while those of sheep had declined, the numbers being for cattle 2,132, and for sheep only 623. The value of these imports of pedigree stock and the improvement effected in Canadian cattle as shown in the quality of those exported to Great Britain is remarked upon. It is added that the export of cattle from Canada has now ceased to be an experiment, and that during the year 1883 it had considerably exceeded that of the previous year, the number being 55,625 against 35,378 in 1882. The increase in the number of

sheep exported is also striking, namely, 114,352 compared with 75,907 in 1882.

"With reference to the question of the breed of sheep, as one which has special interest and importance for Canada in connection with the subject of exports, it was pointed out in the report of the Minister of Agriculture for 1882 that the farmers of that country would find it much to their advantage to substitute to a large extent, if not altogether, for the long-woolled varieties of sheep, breeds with shorter wools, such as the Shropshire and other Downs or Cheviots, short wools commanding higher prices, while long wools are not so well adapted to the present process of manufacturing. The Down varieties are moreover preferred for the quality of their mutton.

"The same report adverting to the decline in the quantity and quality of Peruvian guano as a fertilising material, and to the recent development of the manufacture of fertilizers, draws attention to the increasing quantities of phosphate of lime now exported from Canada, amounting in the year 1882 to 17,000 tons, of which Great Britain took 13,000 tons. In Table No. XIX the imports of this material into the United Kingdom for the last two years are separately shown.

"An improved system of crop reporting has been put into operation in Manitoba and the North-West Territory, with a view to the more perfect collection of current statistics relating to agriculture, and promises successful results. The returns received from the Manitoba Department of Agriculture for the year 1883 show that the area under wheat was 208,674 acres, barley 48,225 acres, oats 172,345 acres, and potatoes 12,168 acres, the estimated quantity produced being for wheat 4,956,000 bushels, barley 1,446,000 bushels, and oats 7,583,000 bushels.

"In the Manitoba crop bulletin, dated 1st August, 1884, encouraging reports as to the prospects of the wheat and barley crops in that province for the present year are given, but it is expected that the average yield of oats will fall short of that of 1883.

"As regards live stock the numbers in 1883 were, of horses 15,486, horned cattle 53,894, sheep 4,211 and pigs 27,991.

"For the important province of Ontario the most recent official returns furnished through the Board of Trade are those for the year 1881, shown in the tables, but in a report issued by the Department of Agriculture, at Washington, in February last, particulars are given relating to the principal crops for 1882 and 1883, with the numbers of live stock on the 15th of June in each of those years, extracted from the November report of the Bureau of Industries of the province of Ontario. From these statistics, which although not communicated officially to this department by the bureau in question, may be of interest, it would appear that in 1883 the area sown with fall and spring wheat was together 1,676,000 acres, against 1,775,000 acres in 1882, the estimated quantities produced being 21,253,000 bushels in 1883, and 40,921,000 bushels in 1882, the estimated average rate of produce per acre of fall wheat having been only 10·5 bushels in 1883, whereas in 1882 it was 26·3 bushels per acre. Barley occupied

757,000 acres in 1883, with an estimated crop of 18,690,000 bushels, and 848,000 acres in 1882, the produce being 24,284,000 bushels. Oats covered 1,423,000 acres in 1883 and 1,375,000 acres in 1882, with an estimated yield of 55,642,000 bushels and 50,097,000 bushels respectively. The live stock returns, as extracted from the same report, give the total number of horses in 1883 as 561,000, horned cattle nearly 1,822,000, including 17,000 working oxen, sheep 1,871,800; of these nearly 1,626,000 were of the coarse woolled breed. Pigs numbered altogether 907,800. From the same source figures are given showing the estimated produce of the principal crops in the dominion of Canada in the decennial periods 1851 to 1881, showing that in the latter year the wheat product was 32,350,000 bushels; barley, 16,844,000 bushels; oats 70,493,000 bushels; maize, 9,025,000 bushels; peas and beans, 13,749,000 bushels, and potatoes 55,268,000 bushels. The Manitoba Department of Agriculture in the bulletin before referred to, in allusion to the August report of the Bureau of Industries, Ontario, gives an extract therefrom to the effect that it is estimated that the aggregate production of the fall and spring wheat crop in the latter province in 1884 will be 30,632,000 bushels, compared with 21,323,900 bushels in 1883, but a supplementary report states that the aggregate production exceeds last year's harvest by 10,500,000 bushels. Barley is a good crop in the southern portions of the province, the northern and eastern being affected by the summer drought. The reports relating to oats are of very similar character.

"With respect to the Australasian colonies, no information has been received from the colony of New South Wales. In three out of the remaining six, the area under wheat at last harvest shows an increase, while a decrease appears in Tasmania, New Zealand, and Queensland. In Victoria the acreage under this crop was 1,104,300 acres; in South Australia, 1,846,100 acres; in Western Australia, 28,700, the total increase in these being 240,700 acres, while in the three other colonies for which such particulars have reached the agricultural department, the decreased acreage amounts to 24,800 acres. Barley is not an important crop, and amounted to 102,200 acres against 92,500 in the previous season, in the six last-mentioned colonies. Oats occupied 481,200 acres in these colonies, principally in Victoria and New Zealand, where the produce was respectively 4,717,000 bushels and 9,231,000 bushels, at the rate of 25 and 35 bushels per acre. The produce of the wheat crop in the six colonies, for which the acreage in 1883 is here given, amounted altogether to 41,202,100 bushels, or an average of about 12 bushels to the acre, South Australia, where the acreage is larger than in any other of the Australasian colonies, averaging less than 8 bushels per acre with a crop of 14,649,000 bushels. The yield in Victoria was 15,570,000 bushels, or 14 bushels per acre, Western Australia about 374,000 bushels, or 13 bushels per acre, and New Zealand, with an area of 377,700 acres, 9,827,000 bushels, or 26 bushels per acre. Potatoes were planted on 82,700 acres in these colonies, and produced about $4\frac{1}{4}$ tons to the acre, the New Zealand average being nearly $5\frac{1}{2}$ tons. No return as to maize in 1883, in the colony of New South Wales, appears in the tables for the reason above mentioned in regard to the other

corn crops, but in Queensland, where it is also principally grown, it occupied 56,400 acres, producing 1,619,000 bushels. The acreage of the vineyards, so far as the returns received show, is on the whole maintained.

"For the different kinds of live stock information of more recent date than that published last year is still wanted for the two colonies of New South Wales and New Zealand, except in respect of the number of sheep in the latter colony. It was then shown that there were in the Australasian colonies taken together 1,219,000 horses, 8,429,000 horned cattle, and 76,008,000 sheep. The returns for 1883, in the colonies for which they have been received, show an addition over those of the previous year of 17,400 horses, of 187,500 head of cattle, and of 1,241,500 sheep.

"The supplies of fresh mutton from Australia and New Zealand, alluded to in last year's report, increased from 37,283 cwts. in 1882 to 103,689 cwts. in 1883.

"The imports of wool also were larger by 5,901,160 lbs., the total weight having been 351,685,606 lbs.

"For the Cape of Good Hope no returns are available subsequent to those for the year 1875 given in the tables.

"Following the tables relating to the several British colonies, returns containing the latest statistics available for various foreign countries as to the acreage of crops and their estimated yield, have been, as last year, again inserted.

"From Russia figures showing these particulars have now been obtained as regards corn and other crops for the years 1881 and 1883 respectively, but those relating to live stock are only as recent as 1877. The large quantity of grain usually imported thence is well known, and the details as to corn crops show that in the former year Russia had 26,401,000 acres under wheat, 10,789,000 acres under barley, and that oats covered 31,339,000 acres, while rye was grown on 58,232,000 acres. The produce for 1881 is not given in the return, but in 1883 the estimated yield of wheat was 101,101,000 bushels, of barley 59,607,000 bushels, of oats 257,367,000 bushels, and of rye 247,354,000 bushels.

"According to the return of live stock, Russia possessed in 1877 the extraordinary number of 17,589,000 horses, that of cattle being 27,323,000, of sheep 51,822,000, and of pigs 10,839,000.

"With respect to the United States, the reports show in the most important States an increase for 1884 in the area under both winter and spring wheat. The aggregate breadth is estimated to be about 38,500,000 acres. The area in winter wheat is about 27,600,000 acres, or 5 per cent. more than the area harvested last year, the increase in the spring wheat area being about 900,000 acres. The returns generally sustain the promise of earlier reports that a yield of 13 bushels to the acre may be expected, indicating a crop of not less than 500 million bushels. There would be therefore as compared with 1883 an estimated increase in the total wheat product of about 79 million bushels. Maize which occupied 68,300,000 acres last year has apparently increased about 2 per cent., and its aggregate will be nearly 70 million acres. The condition of the crop in September was higher than in any corresponding month since 1880. It promised to produce an average

yield of 26 bushels to the acre, or not less than 1,800 million bushels. The increase acreage sown with barley, the area of which was last year 2,379,000 acres, is also estimated at about 2 per cent. Oats which covered 20,325,000 acres in 1883 had increased in area by 4 per cent., and the crop was reported to be in good condition.

"Rye promised as favourable a yield as wheat. The breadth last year was 2,214,000 acres, and its estimated produce was 28,058,000 bushels. The yield of other corn crops in 1883 was as follows: Maize 1,551,066,000 bushels or 22·7 bushels per acre, barley 50,136,000 bushels or 21·1 bushels per acre, and oats 571,302,000 bushels or 28·1 bushels per acre.

"The Department of Agriculture at Washington states that the chief increase in the area of land planted is that which results from increase of immigration, and is of course most marked in those sections of the country in which this is specially indicated. It is added that the low price of grain, coupled with cheap transport rates from the West, is operating in favour of the extension of dairy farming in portions of New England, New York, and likewise Pennsylvania, Maryland, and Virginia, while the feeding of cattle in the latter States is also on the increase compared with grain growing. A change from cotton to grain, hay, and grass, is noticeable in Arkansas and Tennessee, though in some portions of the latter State grain itself appears to be giving way to pasture, the increase of which on the whole is the most noteworthy feature. There is also, it is stated, an increase of forage crops in Missouri. The returns received by the United States Department of Agriculture indicate that the area of cultivated grasses is somewhat wider than in 1883, chiefly in the South, where there is an apparent tendency to enlarge the area of forage crops.

"With regard to ensilage it is mentioned that maize is the chief crop used. Clover appears to rank next, and then rye and oats in a somewhat less degree. In every State, however, it seems that two-thirds of the ensilage is composed of maize, though the other crops named are also employed.

"The latest returns of live stock show that there were in the United States in 1883, 11,169,683 horses, 1,914,126 mules, 13,501,206 milch cows, 29,040,101 oxen and other cattle, 50,626,626 sheep and lambs, and 44,200,893 pigs, the total estimated values being respectively, of horses 166,746,880*l.*; of mules 32,242,995*l.*; of milch cows 84,697,329*l.*; of oxen and other cattle 136,645,810*l.*; of sheep and lambs 23,980,541*l.*; and of pigs 49,260,227*l.*

"In our last year's report, when stating the average weight of animals brought into the United Kingdom from the different countries whence supplies are usually derived, the desirability of obtaining returns of the number and weight of home-bred animals annually slaughtered for consumption was referred to, and this question has since been under the consideration of the department.

"In accordance with the promise held out in last year's report, arrangements have been made for ascertaining approximately the yield of the corn and certain other crops in the present year. Returns on this subject will be published with as little delay as possible after the results have been obtained."

APPENDIX.

TABLE A.—*Total Area and Acreage under each kind of Crop, Bare Fallow, and Grass; and 5th June*, 1883; *and Number of Poultry, as returned upon the 4th June*, 1884, *in for the United Kingdom.*

	England.		Wales.		Scotland.	
	1884.	1883.	1884.	1883.	1884.	1883.
	ACREAGE UNDER CORN CROPS, GREEN					
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Total area of land and water	32,597,	32,597,	4,722,	4,722,	19,467,	19,467,
„ acreage under crops, bare fallow, and grass	24,844,	24,795,	2,810,	2,800,	4,812,	4,790,
Corn Crops—						
Wheat	2,531,	2,467,	78,	78,	69,	68,
Barley or bere	1,858,	1,912,	130,	134,	231,	246,
Oats	1,620,	1,675,	249,	255,	1,046,	1,046,
Rye	38,	41,	2,	2,	7,	8,
Beans	422,	422,	3,	3,	22,	23,
Peas	226,	236,	2,	2,	2,	2,
Total acreage of corn crops	6,645,	6,752,	464,	475,	1,376,	1,392,
Green Crops—						
Potatoes	360,	335,	41,	40,	164,	169,
Turnips and swedes	1,472,	1,469,	70,	70,	485,	490,
Mangold	319,	322,	7,	7,	1,	2,
Carrots	12,	12,	—	1,	1,	1,
Cabbage, kohl-rabi, and rape	140,	139,	1,	1,	5,	5,
Vetches and other green crops, except clover or grass	384,	371,	5,	6,	18,	16,
Total acreage of green crops	2,688,	2,647,	125,	124,	675,	684,
Clover, sanfoin, and grasses under rotation	2,545,	2,585,	310,	309,	1,526,	1,502,
Permanent pasture or grass not broken up in rotation (exclusive of heath or mountain land)	12,198,	12,009,	1,886,	1,865,	1,207,	1,191,
Flax	2,	4,	—	—	—	—
Hops	69,	68,	—	—	—	—
Bare fallow or uncropped arable land	698,	731,	24,	27,	28,	21,
	NUMBER OF LIVE STOCK, AS RETURNED UPON					
Horses (including ponies), as returned by occupiers of land—	No.	No.	No.	No.	No.	No.
Used solely for purpose of agriculture	775,	778,	73,	74,	143,	143,
Unbroken horses and mares kept solely for breeding	312,	305,	67,	65,	45,	45,
Total number of horses	1,087,	1,084,	140,	139,	188,	188,
Cattle—						
Cows and heifers in milk or in calf	1,715,	1,651,	267,	260,	409,	395,
Other cattle—						
2 years old and above	1,026,	1,010,	112,	107,	248,	252,
Under 2 years old	1,710,	1,556,	302,	285,	480,	447,
Total number of cattle	4,452,	4,217,	681,	652,	1,137,	1,094,
Sheep—						
1 year old and above	10,010,	9,629,	1,786,	1,767,	4,589,	4,553,
Under 1 year old	6,419,	5,966,	871,	814,	2,394,	2,339,
Total number of sheep	16,428,	15,595,	2,657,	2,581,	6,983,	6,892,
Pigs§	2,207,	2,231,	217,	230,	160,	157,
Poultry—§						
Turkeys	375,	—	62,	—	65,	—
Geese	626,	—	226,	—	37,	—
Ducks	1,888,	—	217,	—	264,	—
Fowls	9,497,	—	865,	—	1,942,	—
Total number of poultry	12,385,	—	1,369,	—	2,307,	—

* From Returns prepared by the Registrar-General for Ireland, and laid before Parliament.
§ With the exception of those for Ireland, the number of pigs and poultry are exclusive

APPENDIX.

and Number of Horses, Cattle, Sheep, and Pigs, as returned upon the 4th June, 1884, *each Division of Great Britain, with similar Particulars for Ireland,* and with Total*

[000's omitted.]

Great Britain.		Ireland.		United Kingdom, including Isle of Man and Channel Islands.		
1884.	1883.	1884.	1883.	1884.	1883.	
Crops, Bare Fallow, Grass, &c.						
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
56,786,	56,786,	20,820,	20,820,	77,800,	77,800,	Total area of land and water
32,466,	32,385,	15,243,	15,151,	47,841,	47,667,	„ acreage under crops, bare fallow, and grass
						Corn Crops—
2,677,	2,613,	69,	95,	2,751,	2,713,	Wheat
2,169,	2,292,	167,	184,	2,346,	2,486,	Barley or bere
2,915,	2,975,	1,347,	1,381,	4,277,	4,370,	Oats
47,	51,	7,	7,	54,	58,	Rye
447,	448,	8,	10,	455,	458,	Beans
230,	239,	1,	1,	231,	241,	Peas
8,485,	8,619,	1,600,	1,678,	10,113,	10,327,	Total acreage of corn crops
						Green Crops—
565,	543,	799,	807,	1,374,	1,360,	Potatoes
2,028,	2,029,	304,	307,	2,343,	2,346,	Turnips and swedes
327,	330,	†35,	†38,	363,	369,	Mangold
14,	13,	‡3,	‡3,	17,	17,	Carrots
147,	146,	45,	41,	192,	188,	Cabbage, kohl-rabi, and rape
407,	393,	35,	34,	445,	429,	Vetches and other green crops, except clover or grass
3,488,	3,455,	1,221,	1,230,	4,734,	4,709,	Total acreage of green crops
4,381,	4,396,	1,963,	1,931,	6,392,	6,372,	Clover, sanfoin, and grasses under rotation
15,291,	15,065,	10,346,	10,191,	25,667,	25,289,	Permanent pasture or grass not broken up in rotation (exclusive of heath or mountain land)
2,	4,	89,	96,	91,	100,	Flax
69,	68,	—	—	69,	68,	Hops
750,	778,	24,	25,	774,	803,	Bare fallow or uncropped arable land
the 4th June, 1884 and 5th June, 1883.						
No.	No.	No.	No.	No.	No.	
990,	995,	481,	479,	1,905,	1,899,	Horses (including ponies), as returned by occupiers of land—
424,	416,					Used solely for purpose of agriculture
						Unbroken horses and mares kept solely for breeding
1,414,	1,411,	481,	479,	1,905,	1,899,	Total number of horses
						Cattle—
2,391,	2,306,	1,356,	1,402,	3,765,	3,725,	Cows and heifers in milk or in calf
						Other cattle—
1,386,	1,369,	921,	861,	2,312,	2,235,	2 years old and above
2,492,	2,288,	1,835,	1,833,	4,346,	4,139,	Under 2 years old
6,269,	5,963,	4,112,	4,096,	10,423,	10,098,	Total number of cattle
						Sheep—
16,385,	15,949,	2,027,	1,985,	18,448,	17,966,	1 year old and above
9,683,	9,120,	1,217,	1,234,	10,929,	10,381,	Under 1 year old
26,068,	25,068,	3,244,	3,219,	29,377,	28,348,	Total number of sheep
2,584,	2,618,	1,306,	1,352,	3,906,	3,986,	Pigs §
						Poultry—§
501,	—	707,	796,	1,210,	—	Turkeys
888,	—	1,884,	2,052,	2,783,	—	Geese
2,368,	—	2,619,	2,837,	5,007,	—	Ducks
12,304,	—	7,537,	7,697,	19,944,	—	Fowls
16,061,	—	12,746,	13,382,	28,944,	—	Total number of poultry

† Including beet root. ‡ Including parsnips.
of those kept in towns, and by cottagers with less than a quarter of an acre of land.

TABLE B.—*Proportion per Cent. of the Total Cultivated Acreage under Various Kinds of such Crops, and Number of each Kind of Live Stock to every*

	England.		Wales.		Scotland.	
	1884.	1883.	1884.	1883.	1884.	1883.
	PERCENTAGE OF TOTAL CULTIVATED ACREAGE					
Corn crops (including beans and peas)	26·8	27·2	16·5	17·0	28·6	29·1
Green crops	10·8	10·7	4·5	4·4	14·0	14·3
Grass—						
Clover, &c., under rotation	10·2	10·4	11·0	11·0	31·7	31·3
Permanent pasture	49·1	48·4	67·1	66·6	25·1	24·9
Flax and hops	0·3	0·3	0·0	0·0	0·0	0·0
Bare fallow	2·8	3·0	0·9	1·0	0·6	0·4
Total	100·0	100·0	100·0	100·0	100·0	100·0
	PERCENTAGE OF TOTAL ACREAGE OF CORN CROPS					
Wheat	38·1	36·6	16·7	16·5	5·0	4·9
Barley or bere	27·2	28·3	28·0	28·3	16·8	17·6
Oats	24·4	24·8	53·8	53·6	76·0	75·1
Rye	0·6	0·6	0·4	0·5	0·5	0·6
Beans	6·3	6·2	0·7	0·6	1·6	1·7
Peas	3·4	3·5	0·4	0·5	0·1	0·1
Total	100·0	100·0	100·0	100·0	100·0	100·0
	PERCENTAGE OF TOTAL ACREAGE OF GREEN CROPS					
Potatoes	13·4	12·7	32·9	32·0	24·3	24·7
Turnips and swedes	54·8	55·4	56·2	56·4	71·9	71·7
Mangold	11·9	12·2	5·3	5·4	0·2	0·2
Carrots	0·4	0·4	0·3	0·4	0·1	0·2
Cabbages, kohl-rabi, and rape	5·2	5·3	1·1	1·1	0·8	0·8
Vetches, lucerne, and any other green crop, except clover or grass	14·3	14·0	4·2	4·7	2·7	2·4
Total	100·0	100·0	100·0	100·0	100·0	100·0
	NUMBER OF EACH KIND OF LIVE STOCK TO EVERY					
Horses	4·4	4·4	5·0	5·0	3·9	3·9
Cattle	17·0	17·0	24·2	23·3	23·6	22·8
Sheep	66·1	62·9	94·6	92·2	145·1	143·9
Pigs	8·9	9·0	7·7	8·2	3·3	3·3

of Crops, and of the Acreage of Corn and Green Crops under the several Descriptions per 100 *Acres under Cultivation, in each of the Years* 1884 *and* 1883.

Great Britain.		Ireland.		United Kingdom, including Isle of Man and Channel Islands.		
1884.	1883.	1884.	1883.	1884.	1883.	
UNDER VARIOUS KINDS OF CROPS IN EACH YEAR.						
26·1	26·6	10·5	11·1	21·1	21·7	Corn crops (including beans and peas)
10·8	10·7	8·0	8·1	9·9	9·9	Green crops
						Grass—
13·5	13·6	12·9	12·7	13·4	13·4	Clover, &c., under rotation
47·1	46·5	67·9	67·3	53·7	53·0	Permanent pasture
0·2	0·2	0·6	0·6	0·3	0·3	Flax and hops
2·3	2·4	0·1	0·2	1·6	1·7	Bare fallow
100·0	100·0	100·0	100·0	100·0	100·0	Total
UNDER EACH KIND OF CORN CROP IN EACH YEAR.						
31·5	30·3	4·3	5·6	27·2	26·3	Wheat
25·6	26·6	10·5	11·0	23·2	24·1	Barley or bere
34·4	34·5	84·2	82·3	42·3	42·3	Oats
0·5	0·6	0·4	0·4	0·5	0·6	Rye
5·3	5·2	0·5	0·6	4·5	4·4	Beans
2·7	2·4	0·1	0·1	2·3	2·3	Peas
100·0	100·0	100·0	100·0	100·0	100·0	Total
UNDER EACH KIND OF GREEN CROP IN EACH YEAR.						
16·2	15·7	65·4	65·6	29·0	28·9	Potatoes
58·1	58·7	24·9	24·9	49·5	49·8	Turnips and swedes
9·4	9·6	2·8	3·1	7·7	7·8	Mangold
0·4	0·4	0·3	0·3	0·3	0·4	Carrots
4·2	4·2	3·7	3·4	4·1	4·0	Cabbages, kohl-rabi, and rape
11·7	11·4	2·9	2·7	9·4	9·1	Vetches, lucerne, and any other green crop, except clover or grass
100·0	100·0	100·0	100·0	100·0	100·0	Total
100 ACRES UNDER CROPS, FALLOW AND GRASS.						
4·4	4·4	3·2	3·2	4·0	4·0	Horses
19·3	18·4	27·0	27·0	21·8	21·2	Cattle
80·3	77·4	21·3	21·2	61·4	59·5	Sheep
8·0	8·1	8·6	8·9	8·2	8·4	Pigs

TABLE C.—*Total Acreage under each kind of Crop, Bare Fallow, and Grass; and* 1873 *to* 1884

(The total area of land and water in

[000's omitted.]

	1873.	1874.	1875.	1876.	1877.	1878.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres
Total acreage under crops, bare fallow, and grass	31,103,	31,267,	31,416,	31 552,	31,712,	31.855,
Total acreage of permanent pasture or grass not broken up in rotation (exclusive of heath or mountain land)	12,916,	13,178,	13,313,	13,516,	13,728,	13,911,
Total acreage of arable land	18,187,	18,089,	18,104,	18,036,	17,984,	17,943,
Corn Crops—						
Wheat	3,490,	3,630,	3,342,	2,996,	3,169,	3,218,
Barley or bere	2,336,	2,288,	2,510,	2,533,	2,418,	2,470,
Oats	2,676,	2,596,	2,664,	2,798,	2,754,	2,699,
Rye	52,	47,	55,	56,	60,	60,
Beans	587,	559,	564,	518,	498,	438,
Peas	318,	311,	316,	293,	312,	283,
Total acreage of corn crops	9,459,	9,431,	9,452,	9,195,	9,210,	9,168,
Green Crops—						
Potatoes	515,	520,	523,	503,	512,	508,
Turnips and swedes	2,122,	2,133,	2,143,	2,146,	2,073,	2,032,
Mangold	326,	323,	362,	348,	358,	343,
Carrots	15,	14,	15,	16,	16,	15,
Cabbage, kohl-rabi and rape	175,	169,	190,	179,	183,	172,
Vetches, and other green crops (except clover or grass)	424,	422,	432,	380,	442,	421,
Total acreage of green crops	3,576,	3,581,	3,664,	3,572,	3,585,	3,491,
Clover, sanfoin, and grasses under rotation	4,367,	4,341,	4,354,	4,540,	4,494,	4,573,
Flax	15,	9,	7,	8,	7,	7,
Hops	63,	66,	69,	70,	71,	72,
Bare fallow or uncropped arable land	706,	660,	558,	651,	616,	632,

NUMBER OF LIVE STOCK AS RETURNED

	No.	No.	No.	No.	No.	No.
Horses (including ponies), as returned by occupiers of land—						
Used solely for purposes of agriculture	942,	944,	951,	969,	971,	979,
Unbroken horses and mares kept solely for breeding	335,	367,	389,	406,	418,	433,
Total number of horses	1,276,	1,312,	1,340,	1,375,	1,389,	1,413,
Cattle—						
Cows and heifers in milk or in calf	2,238,	2,274,	2,253,	2,226,	2,207,	2,208,
Other cattle—						
2 years old and above	1,420,	1,510,	1,585,	1,568,	1,464,	1,477,
Under 2 years old	2,307,	2,342,	2,174,	2,050,	2,027,	2,053,
Total number of cattle	5,965,	6,125,	6,013,	5.844,	5,698,	5,738,
Sheep—						
1 year old and above	18,778,	19,449,	18,775,	18,258,	18,145,	18,055,
Under 1 year old	10,650,	10,865,	10,393,	9,925,	10,016,	10,351,
Total number of sheep	29,428,	30,314,	29,167,	28,183,	28,161,	28,406,
Pigs*	2,500,	2,423,	2,230,	2,294,	2,499,	2,483,

* Exclusive of those kept in towns, and by cottagers

Number of each kind of Live Stock returned in Great Britain in each Year from inclusive.

Great Britain is 56,786,199 acres.)

[000's omitted.]

1879.	1880.	1881.	1882.	1883.	1884.	
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
31,976,	32,102,	32,212,	32,313,	32,385,	32,466,	Total acreage under crops, bare fallow, and grass
14,167,	14,427,	14,643,	14,822,	15,065,	15,291,	Total acreage of permanent pasture or grass not broken up in rotation (exclusive of heath or mountain land)
17,809,	17,675,	17,568,	17,492,	17,320,	17,175,	Total acreage of arable land
						Corn Crops—
2,890,	2,909,	2,806,	3,004,	2,613,	2,677,	Wheat
2,667,	2,467,	2,442,	2,255,	2,292,	2,169,	Barley or bere
2,657,	2,797,	2,901,	2,834,	2,975,	2,915,	Oats
49,	41,	42,	57,	51,	47,	Rye
444,	427,	440,	437,	448,	447,	Beans
278,	234,	217,	247,	239,	230,	Peas
8,985,	8,876,	8,848,	8,833,	8,619,	8,485,	Total acreage of corn crops
						Green Crops—
541,	551,	579,	541,	543,	565,	Potatoes
2,017,	2,024,	2,036,	2,024,	2,029,	2,028,	Turnips and swedes
364,	343,	349,	334,	330,	327,	Mangold
16,	17,	16,	13,	13,	14,	Carrots
168,	162,	143,	150,	146,	147,	Cabbage, kohl-rabi, and rape
448,	380,	388,	413,	393,	407,	Vetches and other green crops (except clover or grass)
3,554,	3,477,	3,511,	3,475,	3,455,	3,488,	Total acreage of green crops
4,473,	4,434,	4,342,	4,327,	4,396,	4,381,	Clover, sanfoin, and grasses under rotation
7,	9,	7,	5,	4,	2,	Flax
68,	67,	65,	66,	68,	69,	Hops
721,	813,	796,	784,	778,	750,	Bare fallow or uncropped arable land

IN THE MONTH OF JUNE IN EACH YEAR.

No.	No.	No.	No.	No.	No.	
985,	980,	987,	989,	995,	990,	Horses (including ponies), as returned by occupiers of land— Used solely for purposes of agriculture
448,	441,	438,	425,	416,	424,	Unbroken horses and mares kept solely for breeding
1,433,	1,421,	1,425,	1,414,	1,411,	1,414,	Total number of horses
						Cattle—
2,255,	2,242,	2,270,	2,267,	2,306,	2,391,	Cows and heifers in milk or in calf
						Other cattle—
4,405,	1,461,	1,506,	1,396,	1,369,	1,386,	2 years old and above
2,196,	2,210,	2,136,	2,144,	2,288,	2,492,	Under 2 years old
5,856,	5,912,	5,912,	5,807,	5,962,	6,269,	Total number of cattle
						Sheep—
18,172,	17,186,	16,143,	15,574,	15,949,	16,385,	1 year old and above
9,985,	9,433,	8,438,	8,746,	9,120,	9,683,	Under 1 year old
28,157,	26,619,	24,581,	24,320,	25,068,	26,068.	Total number of sheep
2,092,	2,001,	2,048,	2,510,	2,618,	2,584,	Pigs*

with less than a quarter of an acre of land.

TABLE D.—*Number of Silos constructed for the Ensilage of Fodder in each County of England, Wales, and Scotland, as returned up to June, 1884, and the Total and Average Capacity of those in each County, and in Great Britain.*

Counties.	Number of Silos.	Total Capacity.	Average Capacity.	Counties.	Number of Silos.	Total Capacity.	Average Capacity.
	No.	Cubic ft.	Cubic ft.		No.	Cubic ft.	Cubic ft.
Total for Great Britain	610	1,861,744	3,052	WALES.			
				Anglesey	—	—	—
				Brecon	1	2,772	2,772
England	514	1,477,027	2,873	Cardigan	7	29,087	4,155
Wales	36	109,222	3,034	Carmarthen	7	28,779	4,111
Scotland	60	275,495	4,592	Carnarvon	4	6,333	1,583
				Denbigh	5	13,705	2,741
ENGLAND.				Flint	—	—	—
Bedford	13	44,420	3,417	Glamorgan	3	6,016	2,005
Berks	2	4,320	2,160	Merioneth	4	13,218	3,304
Buckingham	2	26,432	13,216	Montgomery	3	7,692	2,564
Cambridge	11	32,154	2,923	Pembroke	2	1,620	810
Chester	34	83,736	2,463	Radnor	—	—	—
Cornwall	3	4.834	1,611				
Cumberland	5	12,710	2,542	SCOTLAND.			
Derby	13	42,267	3,251	Aberdeen	—	—	—
Devon	26	115,710	4,451	Argyll	12	108,343	9,029
Dorset	18	77,914	4,329	Ayr	2	4,800	2,400
Durham	8	28,114	3,514	Banff	2	6,592	3,296
Essex	16	97,508	6,094	Berwick	3	7,308	2,436
Gloucester	22*	50,861	2,312	Bute	1	918	918
Hants	24	55,387	2,308	Caithness	—	—	—
Hereford	3	2,520	840	Clackmannan	—	—	—
Hertford	14	29,319	2,094	Dumbarton	1	773	773
Huntingdon	—	—	—	Dumfries	5	19,728	3,946
Kent	37	101,415	2,741	Edinburgh	4	8,876	2,219
Lancaster	33	79,243	2,401	Elgin, or Moray	1	1,440	1,440
Leicester	8	11,979	1,497	Fife	2	1,722	861
Lincoln	2	5,392	2,696	Forfar	1	2,592	2,592
Middlesex	—	—	—	Haddington	—	—	—
Monmouth	2	2,767	1,383	Inverness	4	17,336	4,334
Norfolk	59	142,403	2,414	Kincardine	—	—	—
Northampton	12	21,608	1,801	Kinross	—	—	—
Northumberland	4	6,480	1,620	Kirkcudbright	2	1,578	789
Notts	14	23,214	1,658	Lanark	6	41,114	6,852
Oxford	—	—	—	Linlithgow	—	—	—
Rutland	—	—	—	Nairn	—	—	—
Salop	7	19,754	2,822	Orkney	1	2,145	2,145
Somerset	9	17,738	1,971	Peebles	2	9,288	4,644
Stafford	16	37,195	2,325	Perth	2	3,486	1,743
Suffolk	9	18,846	2,094	Renfrew	6	30,318	5,053
Surrey	16	29,162	1,823	Ross and Cromarty	—	—	—
Sussex	9	16,565	1,841	Roxburgh	3	7,138	2,379
Warwick	6*	66,436	11,073	Selkirk	—	—	—
Westmorland	5	27,604	5,521	Shetland	—	—	—
Wilts	3	12,829	4,276	Stirling	—	—	—
Worcester	2	13,824	6,912	Sutherland	—	—	—
York	47	114,367	2,433	Wigtown	—	—	—

Note.—The *largest* silo returned is in the county of Argyll, the dimensions being 60 ft. long, 60 ft. wide, and 16 ft. deep, having a total capacity of 57,600 cubic feet.

The *smallest* silo returned is in the county of Hants, the dimensions being 6 ft. long, 4 ft. wide, and 5 ft. deep, having a total capacity of 120 cubic feet.

* Others in course of construction.

TABLE E.—*Value of Imports of Live Stock, Corn, Grain, Flour, Meal, and various Kinds of Dead Meat and Provisions into the United Kingdom in each Year, from* 1871 *to* 1883 *inclusive; and Proportion per Head of the Population.*

Years.	Imports.				Population of the United Kingdom, Estimated at the middle of each Year.‡	Value per Head of the Population.		
	Live Cattle, Sheep, and Pigs.	Corn, Grain, Flour, and Meal.*	Dead Meat and Provisions.†	Total Value.				
	£	£	£	£	No.	£	*s.*	*d.*
1871...	5,663,150	42,691,464	16,593,668	64,948,282	31,513,442	2	1	3
'72....	4,394,850	51,228,816	18,604,273	74,227,939	31,835,757	2	6	8
'73...	5,418,584	51,737,811	23,854,967	81,011,362	32,124,598	2	10	5
'74...	5,265,041	51,070,202	25,224,958	81,560,201	32,426,369	2	10	4
'75...	7,326,288	53,086,691	25,880,806	86,293,785	32,749,167	2	12	8
'76....	7,260,119	51,812,438	29,851,647	88,924,204	33,093,439	2	13	9
'77....	6,012,564	63,536,322	30,144,013	99,692,899	33,446,930	2	19	7
'78....	7,453,309	59,064,875	32,636,877	99,155,061	33,799,386	2	18	8
'79...	7,075,386	61,261,437	32,835,911	101,172,734	34,155,126	2	19	3
'80....	10,239,295	62,857,269	38,744,593	111,841,157	34,468,552	3	4	11
'81...	8,525,256	60,856,768	35,760,286	105,142,310	34,929,679	3	–	2
'82....	9,271,956	63,539,315	31,992,680	104,803,951	35,289,950	2	19	5
'83...	11,983,754	67,622,367	37,236,612	116,842,733	35,611,816	3	5	7

* Including Indian corn, peas, and beans.

† Beef, mutton, pork, bacon, and hams, meat salted or fresh, meat preserved otherwise than by salting, eggs, butter, cheese, and potatoes.

‡ Taken from the several annual reports of the registrar-general. The numbers are exclusive of the population in the islands in the British seas, and of the army, navy, and merchant service abroad.

II.—*Savings Banks Statistics.*

THE following letter is taken from the *Times* of 25th November, 1884:—

"Sir,—Lord Dunraven, I fear, has not paid adequate attention to the alleged post office return on which he bases his extraordinary assertion that the number of depositors of the working classes has fallen off of late years. 'He happened lately,' he says in his speech at Sheffield, 'to be turning over some papers on the subject, and he found a return of depositors in the post office savings banks. Twenty different offices were taken in various localities as types of all, and a unit of 1,000 depositors was fixed for comparison between the early part of the years 1875, 1879, and 1884. The result was to show that the number of artisan depositors had fallen off from 1,223 in 1875 to 923 in 1884; the labourers from 1,052 to 757; while people of no occupation, clerks and minors — probably children of the upper middle class—had increased in these returns.' In a letter in the *Times* of 17th November, he repeats this statement, and dwells on its importance.

"Now I have to ask—Is there any 'return' in existence such as that alleged by Lord Dunraven? Having some acquaintance with parliamentary papers, I was surprised by his statement. I have since made inquiry and can find no such return. I do not suppose now that Lord Dunraven meant to convey the impression that the return he referred to was a parliamentary one, though that was my first impression; but he will admit the importance of the public understanding that such an impression would be incorrect; that, on the contrary, the return is not guaranteed as a parliamentary return would be, and the public have not the same means of finding out what it precisely is.

"Instead of there being a parliamentary return, there appear to be in existence only certain private documents communicated by the postmaster-general in his department to an individual gentleman at his request, and somewhat irregularly published, and each analysing at different periods 10,000 accounts of depositors in savings banks; but neither for the form nor method of procuring the information, nor for the comparison between the statements at different times, can the department be held responsible. Lord Dunraven's account of what the return is is also inaccurate. It is not true that the 10,000 accounts analysed are those of twenty different offices in twenty different localities taken as types. The return of 1875 was prepared from 10,000 depositors' accounts opened during several days at all the offices throughout the United Kingdom. The return of 1879 was prepared from 10,000 accounts opened at eighteen different offices selected 'in order to embrace all varieties of locality.' The return of 1883 was prepared from 10,000 accounts opened at twenty different offices, 'selected with a similar object.' Thus the return of 1875 cannot properly be compared with those of 1879 or 1883 at all, while the two latter cannot be compared with each other, the localities selected as types being to a large extent different in the two years. When I state that the return for 1883 includes such localities as Newcastle, Liverpool, Glasgow, and Belfast, which are not dealt with in the return for 1879, it will be seen how impossible it is to compare the two.

"There are other fundamental objections to the use of these returns in the way Lord Dunraven has used them, and to the conclusion he draws from them. In the first place, a return as to depositors in savings banks dealing only with 10,000 accounts is not to be depended on for any purpose. This number is only one-third of 1 per cent. of the total number of depositors. To justify any conclusion at all, a much larger number would have to be taken as a sample—at the very least, I should say, ten or twenty times as many. No one who knows anything of statistics will have any doubt that it is only by chance that the number of unmarried women per 10,000 appears in the first return as 148, in the second as 360, and in the last as 88. No changes in human affairs are known to have occurred to cause any such changes in the proportion of unmarried women depositors. Such results are only to be accepted as corresponding to actual facts on the most unimpeachable evidence. Similarly, to take the very figures Lord Dunraven refers to, can any one believe that the number of labourer depo-

sitors fell off by 50 per cent. between 1875 and 1879, and then increased by 25 per cent. between 1879 and 1883, the number of artisans, on the other hand, diminishing at each date since 1875?

"In the next place, a return relating to 10,000 accounts only in each year, even if the localities and offices selected were precisely the same, would only show the changes among the depositors relatively to each other; it would not show any falling off or increase absolutely, which could only be shown by allowing for the changes in the total number of depositors at the date of each return. Thus it is quite conceivable that with the total number of depositors increasing by 100 per cent. there might be a fall in the proportion of any one class amounting to 50 per cent.—say, from 2,000 per 10,000 to 1,000 per 10,000—and yet the total number of depositors of that class would not have fallen off at all. The reason would be that in the first case there would be, say, 1 million depositors, on which 2,000 per 10,000 would come to 200,000, and in the second case there would be 2 million depositors, on which 1,000 per 10,000 would also come to 200,000. Rectifying the present statement for the numbers of depositors in each year, we find that the proportions of 1,233, 1,098, and 923 per 10,000 for artisans, and of 1,052, 514, and 757 for labourers, would give the following as the total numbers in each year of comparison:—1875, 219,116 artisans, 186,951 labourers; 1879, 218,334 artisans, 102,207 labourers; 1883, 286,650 artisans, 235,097 labourers.

"Of course, these figures are still misleading, the basis of the return, as I have already explained, being most inadequate; but they show no such falling-off of artisans and labourers as Lord Dunraven imagines. On the contrary, there is a large increase. If the return is a good one at all, still it does not show a falling-off in the number of artisan and labourer depositors, but an increase.

"The return being thus totally useless for any purpose of comparison, the public are as free as they were before to use the fact of the steady increase of the savings bank deposits as a sign of the prosperity of the working and lower middle classes of the country. These classes are known to form the bulk of the depositors (a fact so far corroborated by all these returns), though there are no means of knowing the exact proportions, compared with other classes, in which they deposit.

"Lord Dunraven refers in his letter of 17th November to a statement at Sheffield to the effect that out of 13,481,000*l.* of deposits by the working classes of the country, 11,800,000*l.* was withdrawn. It would have been desirable if he had made his statement more explicit. Judging by the similarity of one of the figures, I assume that he refers to the fact that in 1883 there were 'withdrawals' as well as 'deposits' in all the post office savings banks to the amounts stated, not merely withdrawals and deposits by the working classes alone. But in every year, of course, there are withdrawals and deposits in savings as in other banks; and it is only by the difference between these that the aggregate balance at the credit of depositors increases or diminishes. It will reassure Lord Dunraven to know that the increase of the aggregate balance in 1883 was larger than it has been in any year since 1879, with

the exception of 1882, while the amount withdrawn per head was also smaller than in any of those years with the same exception. If Lord Dunraven referred to other figures, perhaps he will be good enough to state what they are and refer to his authority.

"I am, &c., X. Y. Z."

III.—*Industrial Remuneration Conference.**

The arrangements for this Conference are now practically complete; it will be held in the Prince's Hall, Piccadilly, on the 28th, 29th, and 30th of January, 1885, and the Right Honourable Sir Charles W. Dilke has promised to preside.

So many societies of different kinds have given a favourable response to the invitation of the Committee, and agreed to send delegates, that the gathering will be of a thoroughly representative character.

The proceedings of the first day will be devoted to a consideration of the changes which have taken place during the last hundred years in the distribution of the products of industry between capital and labour respectively.

The discussion will be opened with papers by Sir Thomas Brassey, Mr. Giffen, Mr. Lloyd Jones, Mr. Hutchinson, of Leeds, and Miss Edith Simcox.

On the second day, the practicability of checking influences which have a prejudicial effect on the continuity of employment and rates of wages will be the chief subject for consultation. Mr. Houldsworth, M.P.; Mr. Burnett, of the Amalgamated Engineers, and Mr. Mawdsley, of the Amalgamated Cotton Spinners, as well as Mr. Marshall, the newly elected Professor of Political Economy in Cambridge, and Mrs. E. A. Patterson, have promised papers on this subject.

More general questions connected with the well-being of the working classes will also be raised in papers by Mr. B. Jones, on Co-operation; Mr. Sedley Taylor, on Industrial Partnership; and Mr. W. J. Harris, M.P.

On the third day an opportunity will be given to some of the advocates of more extreme measures to state their views. Professor Newman and Mr. A. R. Wallace will put the case on behalf of Land Nationalisation, but Mr. A. J. Balfour, M.P., Mr. Frederic Harrison, and Professor Nicholson, will also have something to say on the subject. If there is time for discussing with any thoroughness the questions which will be thus raised, the Conference is likely to be of a most interesting character, and to attract a considerable attendance of the general public.

* With reference to the article "A New Industrial Inquiry," in the September number of the *Journal* for 1884, p. 516.

IV.—*The forthcoming Celebration of the Society's Jubilee.*

With reference to the approaching Celebration of the Society's Jubilee—which it is proposed shall take place on the 22nd and 23rd of June next—the following letter, with its enclosure, has been received from the Foreign Office:—

"Foreign Office,
"22*nd December*, 1884.

"Sir,—I am directed by Earl Granville to transmit to you, for the information of the Statistical Society, a copy of a Circular dispatch which, in compliance with your letter of the 12th inst., his lordship has had pleasure in addressing to Her Majesty's representatives in the countries named overleaf* relative to the celebration of the Society's Jubilee next June.

"I am, Sir,
"Your most obedient, humble Servant,
(Signed) "Edmond Fitzmaurice."

"*The Secretary, Statistical Society,*
"9, *Adelphi Terrace, W.C.*"

"(CIRCULAR DISPATCH.)

"Commercial.

"Foreign Office,
. . . . . "22*nd December*, 1884.

"I have to inform you that the Statistical Society, one of the leading literary and scientific bodies in London, intend to celebrate the Jubilee of the foundation of the Society in June, 1885. The object of the Meetings to be then held will be more particularly—

"1. To review the work of the Society and of similar bodies in foreign countries during the past fifty years;

"2. To consider what has been achieved by the International Statistical Congress, or by other means, in the direction of the uniformity of statistics, and by what measures that object may be further promoted;

"3. To consider the possibility of establishing an International Statistical Association.

"In view of the high character of the Statistical Society, and of the importance of the subject to which its aims are directed, I have consented that Her Majesty's Representatives in countries in which communications are made to the Society by Public Depart-

* Argentine Republic, Austria-Hungary, Baden, Bavaria, Belgium, Brazil, Central America, Chili, Columbia, Denmark, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Peru, Portugal, Roumania, Russia, Saxony, Spain, Sweden and Norway, Switzerland, United States, Uruguay, Wurtemberg

ments should make known, unofficially, to the Governments to which they are accredited the intended celebration of the Society's Jubilee and the objects of the Meeting, for the purpose of facilitating the attendance of Representatives of their Statistical Departments and of persons engaged in the study of statistics.

"I have accordingly to request that you will address, unofficially, a note in this sense to the Government to which you are accredited, and that you will ask that this intelligence may be conveyed to Departments and persons interested; and that you will further suggest that communications should be made direct by them to the Secretary of the Statistical Society at No. 9, Adelphi Terrace, Strand, London.

"I am, with great truth,

. . . . . .

"Most obedient, humble Servant,

"(*For Earl Granville*)

(Signed) "EDMOND FITZMAURICE."

V.—*Additions to the Library.*

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Datos mensuales de la Estadistica Comercial. Año 1884. Nos. 24, 25. 8vo.	The Argentine Legation, London
BUENOS AIRES. Bulletin mensuel de Démographie de la ville de—. 3e Année. Nos. 7—9, 1884	The Statistical Bureau
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Statistisches Jahrbuch für 1880, Heft 10; 1881, Heft 2, 3, 4, 7 (in two parts), and 9. 8vo.	—
Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1882. Drittes heft. Der Bergwerksbetrieb Oesterreichs im Jahre 1882. Zweite lieferung. 8vo.	—
Nachrichten über Industrie, Handel und Verkehr . . . XXIX Band. La. 8vo. 1884—	
1. Heft. Amtlicher Bericht über die Geschäftsthätigkeit des k. k. Handels-Ministeriums während des Jahres 1883	Dr. H. F. Brachelli, Vienna
2. Heft. Statistik des österreichischen Telegraphen im Jahre 1883	Dr. H. F. Brachelli, Vienna
3. Heft. Statistik des österreichischen Postwesens im Jahre 1883	Dr. H. F. Brachelli, Vienna
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Statistische Monatschrift. IX Jahrgang, heft 11, 12; X Jahrgang, heft 1, 3—6, 8—11. 10 parts, la. 8vo.	—
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HUNGARY. *Statistisches Jahrbuch für Ungarn.* 8vo. 1884—	The Royal Hungarian Statistical Bureau
12ter Jahrgang, 1882. Heft VII, X, XI.....	
13ter Jarhgang, 1883. Heft III, IX	
BUDAPEST. Bulletin hebdomadaire du Bureau de Statistique de—. (In Hungarian.) 8vo. 1884	—
Prague—	
Bulletin hebdomadaire de la ville de Prague et des communes-faubourgs. (Current numbers).....	The Statistical Bureau, Prague
Statistisches Handbuch der Koniglichen Hauptstadt Prag mit Wyšehrad . . . für das Jahr 1882. Neue folge, zweiter Jahrgang. Deutsche Ausgabe. La. 8vo.	
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Statistique Démographique et Médicale et Tableaux nosologiques des Décès de la—. Année 1879. 8vo.	Dr. E. Janssens, Brussels
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Imperial Maritime Customs. 4to. 1884—	Sir Robert Hart, K.C.M.G.
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Egyptian Statistical Tableaux for the years 1881, 1882, and 1883, compiled and published annually by R. J. Moss and Co., Alexandria. Sheets	Messrs. R. J. Moss, and Co.
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Ville de Paris. Annuaire Statistique de la—, année 1880. La. 8vo	—
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L'Economiste Français. (Current weekly numbers.) Paris	The Editor
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Zeitschrift des königlich Preussischen Statistischen Bureaus. 24ter Jahrgang, 1884, Heft I—IV (in 1 vol.). Diagrams	
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Annali di Statistica. Serie 3a. 8vo. 1884—	
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Review, The	„	„
Sanitary Record, The	„	„
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Urmson, Elliott, and Co., Liverpool (Tobacco)		„
Wool Brokers' Association (Liverpool)		The Association

INDEX TO VOL. XLVII,

YEAR 1884.

PAGE

AGRICULTURE. *Agricultural Returns for the Year* 1884 . . 666

Number of returns furnished by occupiers of land. No returns sent in for 1,470,000 acres, of this area 96 per cent. is in England, and 3½ per cent. in Scotland 666–7
Subdivision of land one of the chief causes of increase in occupiers . . 667
Area under crops, fallow, and grass, increase of 81,000 acres; greater portion of this increase caused by cultivation of waste land . . 667
Acreage of different crops, showing increase or decrease; variations in kinds of live stock. 668–72
Returns of crops and live stock for Ireland 673
Table showing variations between 1883 and 1884 as regards cultivated area and live stock 674
Table of acreage under crops, and number of live stock in grazing and corn counties of England 675–6
Comparison of figures in preceding tables with those of the last year or two . 676–7
Statistics of wheat crop in India 678–9
Agricultural and live stock statistics of Canada, Australasian Colonies, Russia, and the United States. 679–83
Appendix: *tables* of the total area under each kind of crop, bare fallow, and grass, and number of live stock, with percentages and summaries . . 684–9
—— number of silos constructed for the ensilage of fodder in each county, with total and average capacity 690
—— value of imports of live stock, corn, &c., dead meat, and provisions into United Kingdom, 1871-83, and proportion per head of population . . 691

ALCOHOL, quantity produced in France, 1871-83 612
taxation of 10
see also *Potato Spirit.*
ARMIES of the British empire 472
AVERAGING, note on the process of (see *Poynting*) 43

BAILEY (A. H.). *Remarks* in discussion (Levi on Revenue in relation to Taxation) 32
remarks in discussion (Longstaff on Decline in English Death-Rate) 249, 254
BALFOUR (T. G.). Vote of thanks to President for his address . 607
BANK OF ENGLAND—
weekly returns of the issue and banking departments for 1883 . 218–19
BANK NOTES, origin of, and amount in circulation in Europe and United States 490
BANK RATE, resemblance to wheat-price curve 42
table of, 1840-81 64
BANKING System of England and France compared . . . 494
of the British empire 475
BANKS. London clearing house, and amount of promissory notes in circulation in England and Wales, Scotland and Ireland, for 1883 . 217
BATEMAN (A. E.). *Wine Production in France* 609

Falling off in the manufacture of "vin de sucre," and increase in the production of raisin wine and in the supply from vineyards of Algeria . . 609–10

PAGE

BATEMAN (A. E.). *Wine Production in France—contd.*

Extent of land under vine cultivation in France, and quantity of wine produced; progress of phylloxera stayed at great cost; yield and price of wine; German potato spirit used to fortify Spanish wines imported into France; *table* of quantity of alcohol produced in France, 1871-83 . . 610–12
Proposals for assisting the wine interest; adulteration of wines in Paris . 612–13

remarks in discussion (Walford on Statistics of Canada) . . 345
BERTILLON (JACQUES). *The Fate of the Divorced* [translated from the "Journal de la Société de Statistique de Paris," June, 1884] . 519

Comparison of the marriage-rate, suicide, crime, and mortality of the divorced with that of bachelors, widowers, spinsters, and widows in Switzerland, the Netherlands, and the city of Berlin. 519–26

BOOKS. *English Literature in* 1883 171

Extracts from the "Publishers' Circular," with analytical *table* of books published in 1883, compared with 1882 171

German Literature of 1882-83 171

Systematic view of the literary productions of the German bookselling trade, in 1882-83, extracted from the "Börsenblatt" 171

BOURNE (S.). *Remarks* in discussion (Levi on Revenue in relation to Taxation) 31
remarks in discussion (Poynting on Fluctuations in Price of Wheat, &c.) 68–70
remarks in discussion (Martin on Electoral Statistics) . . 121–22
remarks in discussion (Walford on Statistics of Canada) . . 336
BRITISH ASSOCIATION. *Address of the President of Section F, Economic Science and Statistics, at the Fifty-Fourth Meeting, held at Montreal, August,* 1884 (see *Sir Richard Temple*) . . 468
BRITISH EMPIRE, General Statistics of (see *Sir Richard Temple*, "British Association Address") 468
BUDGE (C. O.). Quantity of work capable of being produced by workmen of different nationalities 623
BULLION, its difference from coin 489
and specie, gold and silver, United Kingdom, 1881-83 . . 213
BURDETT (H. C.). *Remarks* in discussion (Martin on Electoral Statistics) 120

CANADA, a Statistical Review of, including its Confederated Provinces (see *Cornelius Walford*) 312
CANALS of the British empire 478
CHADWICK (David). *Remarks* in discussion (Martin on Electoral Statistics) 116
CHADWICK (J. O.). *Remarks* in seconding the adoption of the report 411
CHARITABLE Expenditure in the British empire 481
CLARKE (Hyde). *Remarks* in discussion (Poynting on Fluctuations in Price of Wheat, &c.) 65–68
remarks in discussion (Rabino on Statistics of Egypt) . . 460
COAL, comparative production in different countries . . . 621
see also *Registration.*
COFFEE, taxes on 14
COHEN (Lionel L.). *Remarks* in discussion (Levi on Revenue in relation to Taxation) 27
remarks in discussion (Walford on Statistics of Canada) . . 342
COINAGE, wear and tear of, and difference between coin and bullion . 489
advantage of decimal system 494
COLONIES, British and Foreign (see *Sir R. W. Rawson*) . . . 547

PAGE

COMMERCE. *Financial and Commercial History of* 1883 [from the supplement to the "Statist," 26th January, 1884] . . . 142

1883 a disappointing year in business, but a good one for the masses of the community 142–3
Iron trade depressed for many months, but production has been on the largest scale; coal trade moderately prosperous 144
Textile trades: cotton consumption nearly as large as 1882; increase in cotton yarn and piece goods; wool hardly so favourable . . . 144–5
Agriculture: return for wheat not particularly good; taking crops all round the year was a good one; good prices for beef and mutton . . . 145
Signs of declension in instrumental articles, oils, wool, &c.; failures in grain trade at Newcastle, Liverpool, New York, and Chicago . . . 146–7
—— in bankers' clearing house returns; falling off in amount of shipbuilding 147
Weakness of Stock Exchange; failures and frauds 148
The prospect of 1884 148–9
Index to the Supplement 150

COMMODITIES, fall in price of; its causes and effects (see *Paul Leroy-Beaulieu*) 348
CONSOLS. See *Registration.*
CORN. Gazette average prices, 1883, with summary of 1882 added for comparison 214–15
COTTON IMPORTS, fluctuations in the price of (see *Poynting*) . . 34
industry, comparison of in United Kingdom and United States . 616
CRAIGIE (Major P. G.). *Remarks* in discussion (Levi on Revenue in relation to Taxation) 28
remarks in discussion (Poynting on Fluctuations in Price of Wheat, &c.) 72
CRIME in the British empire 479

DEATH-RATE, English, its recent decline, considered in connection with the cause of death (see *G. B. Longstaff*) 221
DEBENHAM (F.). *Remarks* in discussion (Jeans on Earnings of Labour) 662
DEBT, public, of the British empire 478
DECIMAL system of coinage, advantage of 494
DELBOY (P. A.). *The Present Position of Spain compared with other European Countries* [translated from the "Journal de la Société de Statistique de Paris," September, 1883] . . . 150

Little known of the economic resources of Spain; difficulties to contend with in studying Spanish statistics 151–2
Area, frontiers, population, marriages, death-rate, and average duration of life in Spain as compared with other European countries . . . 152–6
Railway lines, mineral resources, agriculture, wine, live stock, foreign trade, and shipping, as compared &c. 156–61
Colonial possessions and education, as compared &c. 161–3

DIVORCED, the fate of the (see *Jacques Bertillon*) 519
DOXSEY (T.). *Remarks* on President's address 608
DUKES (CLEMENT). Presentation of Howard Medal to . . . 606

EARNINGS. See *Labour.*
EDGEWORTH (F. Y.). *The Rationale of Exchange* . . . 164

The fact of price—the phenomenon analysed in the present paper . . 164
The principle of limit, the law of error and the law of competition . . 165–6

EDUCATION in the British empire 481
EGYPT, statistics of (see *J. Rabino*) 415
ELECTORAL STATISTICS. A Review of the Working of our Representative System from 1832-81, in view of prospective Changes therein (see *J. B. Martin*) 75
ELLIOTT (H. T. W.). *Remarks* in discussion (Poynting on Fluctuations in Price of Wheat, &c.) 71
remarks in discussion (Martin on Electoral Statistics) . . 121

PAGE

EMIGRATION. *Emigration and Immigration from and into the United Kingdom in* 1883. [Report by R. Giffen on the Statistical Tables] 368

Increase of British and Irish emigrants, but decrease of total emigration . 368–9
Increase of immigration and countries whence arrived; increase of excess of emigrants 370–71
Destination of excess of emigrants over immigrants among persons of British and Irish origin in each year, 1876-83 372
Numbers of cabin and steerage passengers, 1876-83, and proportion of English, Scotch, and Irish in the total emigration of persons of British origin at different periods 373

in the British empire 479
see *Colonies*, British and Foreign (Sir R. W. Rawson) . . 547
ENGLAND. See *Registration.*
ENGLISH LITERATURE. See *Books.*
ENSILAGE. See *Agriculture.*
EXCHANGE, Media of, being some notes on the precious metals and their equivalents (see *J. B. Martin*) 485
the rationale of (see *F. Y. Edgeworth*) 164
EXCHANGES, foreign, for 1883 220
EXPORTS, United Kingdom, 1878-83 . . . . . 208–9, 211

FACULTIES. See *Family Faculties.*
FAMILY FACULTIES. Record of (see *F. Galton*) 166
FINANCE. See *Population.*
FINANCIAL HISTORY. See *Commerce.*
FINDLAY (George). *Remarks* in discussion (Willock on Express Trains) 303
FIRES. *The Fires in London during the Year* 1883, *and the Metropolitan Fire Brigade* [from Captain Shaw's Report for 1883] . 166

Number of fires, with proportions of serious to slight losses, 1866-83, lives lost and persons endangered 166–7
Calls, journeys, water supply, and quantity used 167
Strength of the brigade, telegraphic system, &c. 168
Number of fires, classified according to occupations, 1880-83 . . 169
—— according to causes assigned, and *table* showing relative number on each day of the week, 1874-83 170

FLUCTUATIONS in the price of wheat, and in the cotton and silk imports into Great Britain (see *Poynting*) 34
FOWLER (William). *Remarks* in discussion (Martin on Electoral Statistics) 118
FOXWELL (E.). *Remarks* in discussion (Willock on Express Trains) 306
FRANCE, wine production in (see *Bateman*) 609

GAFFAREL (Paul). Advocating extensive colonisation for France, that she may recover her former greatness 564
GALTON (FRANCIS). Letter on the "Record of Family Faculties" . 166
GAOLS. See *Public Institutions.*
GERMAN LITERATURE. See *Books.*
GERMANY possesses no colonies, yet has 10½ millions residing in foreign countries 563
GIFFEN (ROBERT). Note attached to the separate issue of his inaugural address 174
extracts from his "Progress of the Working Classes" . . 352–3
Report to the Secretary of the Board of Trade on the Statistical Tables relating to Emigration and Immigration from and into the United Kingdom in 1883 (see *Emigration*) . . . 368
address at Fiftieth Anniversary Meeting 409
remarks in discussion (Martin on Electoral Statistics) . . 122

PAGE

GIFFEN (Robert)—*contd.*
remarks in discussion (Longstaff on Decline in English Death-Rate) 254
remarks in discussion (Willock on Express Trains) . . . 307
GLADSTONE (W. E.). Letter to Mr. Giffen on receipt of his inaugural address 174
GLAISHER (James). See *Meteorology.*
GLOVER (John). *Remarks* in discussion (Levi on Revenue in relation to Taxation) 29
GOLD, reasons of its adoption for monetary purposes 486
see *Bullion and Specie.*
GREAT BRITAIN, Representative System of (see *Electoral Statistics*, J. B. Martin) 75

HALL (E. Hepple). *Remarks* in discussion (Walford on Statistics of Canada) 340
HAMILTON (Rowland). *Remarks* in discussion (Poynting on Fluctuations in Price of Wheat, &c.) 72
remarks in discussion (Walford on Statistics of Canada) . . 345
HARRISON (Frederic). A new industrial inquiry (from the "Pall Mall Gazette," 8th September, 1884) 516
see also *Industrial Remuneration Conference* 694
HAWKINS (Charles). Cost per patient in St. George's Hospital, 1830 and 1880 354
HEALTH of Inmates of Public Institutions as affected by Structural Arrangements (see *R. D. R. Sweeting*).
HENDRIKS (F.). *Remarks* in discussion (Martin on Electoral Statistics) 122
remarks in discussion (Longstaff on Decline in English Death-Rate) 253
HOSPITALS. Cost per patient at St. George's, 1830 and 1880 . . 354
see also *Public Institutions.*
HOUSES, inhabited, taxes on 15
HOWARD (John). His experiences and opinions on the preservation and improvement of the health of the inmates of public institutions, as far as health is affected by structural arrangements (see *R. D. R. Sweeting*) 125
HOWARD MEDAL. Essay for 1883, abstract of (see *R. D. R. Sweeting*) 125
presentation (1884) to Dr. Clement Dukes 606
to be deferred for one year 404, 606
HOWELL (George). *Remarks* in discussion (Martin on Electoral Statistics) 120
remarks in discussion (Jeans on Earnings of Labour) . . 656
HUMPHREYS (N. A.). *Remarks* in discussion (Longstaff on Decline in English Death-Rate) 250, 254
HURST (George). *Remarks* in discussion (Rabino on Statistics of Egypt) 464
remarks in discussion (Jeans on Earnings of Labour) . . 660

IMMIGRATION into the United States (see *Armand Liégeard*) . . 496
see *Emigration.*
IMPORTS, United Kingdom, 1879-83 210
see also *Cotton, Silk.*
INCOME, taxes on 18
INDUSTRIAL INQUIRY, a new (see *Frederic Harrison*) . . . 516
Remuneration Conference, arrangements for 694
INDUSTRIES. Taxation of 9
INSURANCE. Taxes on 16
IRELAND. See *Registration.*

PAGE

IRON ORE, comparative production in different countries . . . 620
IRRIGATION of land in Egypt 451

JEANS (J. S.). *On the Comparative Efficiency and Earnings of Labour at Home and Abroad* 614

Difficulties of comparing the efficiency of the working classes in different countries 615–16
Comparison of the cotton, wool and worsted, and silk industries in different countries, with *tables* of number of hands, number of spindles and looms, and number of spindles and looms to each operative 616–20
—— ironstone and coal industries, with *tables* showing number of persons employed, and the average and aggregate out-put 620–22
No reliable information for comparing either shipping or agriculture . . 622–3
Experiences of Mr. C. O. Budge as to quantity of work capable of being produced by workmen of different nationalities 623–4
Difficulties of comparing the earnings of the working classes in different countries; official publications as to the rate of wages in various occupations 624–6
Average rates of wages in the United States, United Kingdom, Germany, and France, and comparison of these with wages of British colonies . . 626–7
Comparison of wages paid in the United Kingdom and in the United States . 627–32
—— foregoing figures relating to the United Kingdom with those published by Mr. Leone Levi in 1867 632
Causes of the rise in wages since 1850 633
Agricultural labour: *table* of wages paid in 1850, 1870, and 1880, with percentage increase 634
Increase of wages in Manchester district between 1850 and 1883, and aggregate and average wages paid in United States for the same period . 636–7
Official rates of wages in Belgium in 1822 638
Female and juvenile labour 638–9
Percentage of population of different countries engaged in industrial occupations; unproductive population (women, young children, pensioners, &c.); distribution of population according to occupation 639–40
Comparative cost of living in different countries 641–3
Recapitulation 643–5
Tables showing weekly wages paid in or about 1880; average wages in Australia and New Zealand, and wages in Russia, 1880 646–7
—— of number of hands employed in the leading industries of the United States in 1881, with aggregate and average wages 647–51
—— of wages paid in Massachusetts, 1860 and 1883, and in France, 1853 and 1883 652–3
—— of number of women and children employed in each class of occupation 653–4
—— of number of persons employed in industrial occupations, and persons without specified occupations 654
—— of distribution, as regards occupations, of the population of different countries 655

Discussion on Mr. Jeans's Paper:

Rawson (Sir Rawson W.)

Drew attention to special points to which the discussion should be directed . 656

Howell (George)

Averages of wages generally placed too high; working classes lost more time than formerly through holidays, &c.; their services were dispensed with, too, at an earlier age than heretofore, so that many elderly men were driven on to their clubs; allowance made for rent in the cost of living was too low; regretted that the English Government did not pay more attention to statistics, and thought that if wages could be increased 20, 40, 60, or 100 per cent., we should have a proportionately increased purchasing power 656–7

Walford (Cornelius)

If wages were raised to the extent mentioned by Mr. Howell, our export trade would disappear; the superior position of the American workmen was due, not to higher wages, but to the fact that they did not spend so much of their earnings in beer and tobacco; in America a large amount of work done by machinery, so that fewer hands were employed than in England; as regards the superiority of the English as earthworkers, they were now rivalled by the Italians and Chinese; a mistake had arisen in the statistics of the unproductive classes in America, probably from the fact that the daughters of the labouring classes did not go out to work in mills, &c. . 657–8

Paul (H. Moncreiff)

Difficulty of comparing earnings at home and abroad; differed from Mr. Walford as to superiority of Chinese labour, and from Mr. Jeans in his views as regards the woollen and worsted manufactures; error in Appendix II in relation to earnings in Australia; reasons for rise of wages in France, 1860-80 658–60

PAGE

JEANS (J. S.). *Discussion on his Paper—contd.*

Peace (Walter)

Asked Mr. Jeans if he had taken into consideration the fact that hours of labour were shorter in the colonies than at home 660

Hurst (George)

Difficulty of obtaining accurate statistics as to wages . . . 660

Whitworth (Benjamin)

Cotton trade lately had not paid 2 per cent. on the capital employed; in the present paper the difference in the hours of labour at home and in America had not been taken into account; the higher wages in America would not purchase the same comforts as could be obtained by the workman in England; wages were falling in America and France, and the speaker thought they would have to be reduced in England . . 661

Longstaff (G. B.)

English labour valued at a low estimate in Canada, from the labourers being so discontented and so difficult to manage 661

Levi (Leone)

In fertility of invention the French labourers probably superior to the British; St. Monday the cause of much suspension of labour; in comparing wages, necessary to take into account how much each person gives for wages received; regretted Government did not publish better statistics 661

Debenham (F.)

Drew attention to the large amount of juvenile labour in America . . 662

Pochin (H. D.)

Greater consideration of masters for men now than ever, and the fault of enforced idleness lay chiefly with the men; difficulties of estimating relative value of wages; bad workmen not tolerated in American shops, which was very different to the spirit shown in England . . . 662

Williams (R. Price)

Illustration showing the superiority of the English mechanic over the American 663

Miller (William)

Made a few remarks 663

Martin (J. B.)

Large number of steerage passengers from Canada to England, and the falling off in the number of emigrants to Canada and the United States showed that the higher wages in those countries did not give greater purchasing powers than the earnings in England 664

Jeans (J. S.), reply 664

JOHNSTONE (E. M. M.) *of Dublin*, spoke in discussion (Willock on Express Trains) 303

LABOUR, on the comparative efficiency and earnings of, at home and abroad (see *Jeans*) 614

LAMOTTE (—). Scheme for irrigation of Egypt 457

DE LAVALEYE (—). His theory that fall in price of commodities is due to the suspension of gold coinage (see *Paul Leroy-Beaulieu*) . 350

LAWSON (Robert). *Remarks* in discussion (Longstaff on Decline in English Death-Rate) 252

LEROY-BEAULIEU (Paul). *The Fall in the Price of Commodities; its Cause and Effect* [translated from the "Economiste Française," 12th and 19th April, 1884] 348

Statement of workmen before Commission at the Palais Bourbon, that prices of articles of consumption had increased, disproved by various authorities . 348–49

Theory of M. de Lavaleye, that the fall is owing to the suspension of gold coinage, disputed; France does not reap the same benefit as many other countries 349–50

Extracts from Mr. Giffen's Progress of the Working Classes, with Mr. Charles Hawkins's letter on the cost per patient in St. George's Hospital, 1830 and 1880 352–54

Increase of price of wine caused by ravages of phylloxera; by means taken to destroy the pest, and planting of new vines, old prices will probably be resumed in a few years 355–56

Table of consumption per head in 1866, 1872, 1876, and 1881; and improvements effected in houses for the working classes in Paris . . . 357–59

PAGE

LEVI (Leone). *Statistics of the Revenue of the United Kingdom from* 1859-82, *in Relation to the Distribution of Taxation* (in continuation of a paper read in 1861) 1

The science and art of finance: object and definition of financial "science" and "art" 1–2
Conclusions regarding the state of the revenue in 1860; statement of reforms in taxation then considered necessary 2–3
Reforms in the revenue between 1861 and 1882; reforms foreshadowed in paper of 1861 have been largely carried out; statement of taxes and duties repealed 3–4
Economic condition of the country in 1861-82; comparative statements as regards population, imports and exports, income tax, savings banks, and paupers; diminished tension for changes in the financial system . . 4
Population and finance; sources of public revenue; *tables* showing gross revenue and revenue from taxes in United Kingdom (1802-83) and in different States of Europe (1880) 4–6
Taxation and national income; *table* showing decrease of burden of taxation 6–7
Sources of the revenue, with *table*, 1820-83 7
Taxation on real and personal property, with comparative *table*, 1868-69 and 1882-83; Mr. Prideaux Selby's proposition, that all permanent taxation forms a charge on production, is far too sweeping; capitalised value of incomes from real and personal property; taxes paid by income from realty (15½ per cent.), personalty (11½ per cent.), and industrial with same income only 7 per cent. 7–9
Taxation on personal comforts, luxuries, and industries; *table* for 1842, 1862, and 1882 9–10
Taxation of alcohol: cost per head for spirits, beer, and wine; effect of good harvest and prosperous trade on revenue from alcohol; work of temperance societies; effect on revenue of greatly diminished use of alcohol; proposal by Mr. Stephen Bourne that a large increase of duty should be made on spirits, wine, and beer 10–13
The wine duties, with *tables* showing strength, prices, and duty of wines from France, Portugal, and Spain, and quantities imported in 1882 . . . 13
Taxes on sugar, tea, and coffee; occupations; inhabited houses: suggested extension of inhabited house duty; *table* showing probable increase to revenue from this 14–16
—— insurance; the transfer of property; succession duty introduced in 1853 not a success; inquiry as to its working should be instituted . . . 16–18
—— income: desirability of unit of valuation for taxation of real property both for public revenue and local taxation 18–19
Incidence of taxation on the higher, middle, and working classes; fiscal legislation of late years all in favour of labouring classes 19–21
Appropriation of taxation; cost of civil service and forces under various Governments from 1859-60—1882-83 21–2
Conclusion 23
Tables: I. Production of wheat, bushels per acre; trade imports and exports; revenue from alcoholic beverages, 1861-83 24
—— II. Diagram showing relation of the harvest and of commerce with the revenue from alcohol . . . . . —
—— III. Produce of taxes and gross revenue, 1860-82 25
—— IV. Revenue from principal articles of consumption 25

Discussion on Professor Leone Levi's Paper:

Rhodes (J. G.)

Soundest principle of taxation, placing its incidence almost exclusively upon property, as user of all the property in a country is to all its inhabitants; did not agree with Professor Levi that there was a disadvantage in taxing houses; taxation in relief of labouring classes had not gone far enough; house duty, as at present imposed, a particularly unfair one . . . 26

Cohen (Lionel L.)

Taxes on locomotion and taxes on the transfer of property deserved more emphasis than had been given them in the paper; unfair that coupons to bearer issued in this country had to bear a penny stamp, whilst foreign bonds in this respect were free 27

Craigie (Major P. G.)

Agreed with reader of the paper that all classes being protected by the State should contribute to its cost; recent legislation had the tendency of transferring taxation from the general expenditure of the country to realised property; whilst the largest class has been relieved of taxation, its political powers have been increased; really only one kind of taxation, local taxes being levied with the sanction of the State, the local authority acting only as an agent; inequality of taxes on real and personal property; doubted if Professor Levi was right in regarding revenue from post office as not taxation 28

PAGE

LEVI (Leone). *Discussion on his Paper—contd.*

Glover (John)

Cost of lighthouses not paid out of the general revenue of the country, as Professor Levi seemed to think, but met by a special tax on part of our shipping; taxes on railway passengers and on marine insurance ought to be abolished 29

Bourne (S.)

Did not think the income of the country had increased to the amount represented in the author's table; comparison with other countries not sound, unless the use to which the taxes were put was stated, *e.g.*, in France a large proportion was used for making railways; amount spent in alcohol would be much more beneficial to labour if spent in any other way; taxes on transfer of property were essentially bad 31

Selby (Prideaux)

Permanent taxation, on whomsoever levied, formed a charge on production, and was borne by the whole community; if the taxes on spirits and tobacco were removed the rate of wages would decline, and the labouring classes would have less opportunity for saving 31

Walford (Cornelius)

As income of working classes had greatly improved of late, they should contribute to the direct taxation of the country; for instance a tax of 5*s.* or 10*s.* might be put on all persons placed on parliamentary register . . 32

Bailey (A. H.)

Professor Levi's description of real and personal property not a clear one; depositors in savings banks not persons who earned weekly wages; mistake in the paper as to taxes on insurance; reason why succession duty had failed to produce as much as was estimated 32

Levi (Leone)

Acknowledged the suggestions thrown out in the discussion, but lateness of the hour prevented him from replying in detail 33

remarks in discussion (Rabino on Statistics of Egypt) . . 463

remarks in discussion (Jeans on Earnings of Labour) . . 661

LIBRARY of the Society, additions to, in 1884 . . . . . 175-96, 380-94, 529-46, 696-712

preface to the catalogue, and the rules followed in its preparation 526-28

LIÉGEARD (Armand). *Immigration into the United States* [translated from the "Journal de la Société de Statistique de Paris," June, 1884] 496

Number of immigrants, and annual average, 1820-83, with numbers from each country in 1880; rapid increase of large towns due to immigration; money value of each immigrant to the States, and causes of the fluctuations in numbers in different years 496-99

Tables of emigration according to nationalities, 1867-83, and of increase for 1878 (the date of termination of the financial crisis in United States); increase of European emigration due to increased railway and steamboat accommodation 500-502

Proportion of emigrants to the population of the respective countries . . 502-8

Table of comparison between returns of United States' statistical bureau as to number of immigrants, and returns of countries from which immigrants arrive, with remarks on the variations 509-11

Distribution of emigrants among the various States; regulations for the reception, &c., of immigrants; mortality statistics at Ward Island and Castle Garden 512-16

LIFE INSURANCE in the British empire 481

LITERATURE (English and German). See *Books.*

LLOYD'S statistics of marine casualties for 1883. See *Shipwrecks.*

LOCAL TAXATION. See *Taxation.*

LONDON. See *Banks, Fires.*

LONGSTAFF (G. B.). *The Recent Decline in the English Death-Rate considered in connection with the Causes of Death* . . . 221

Average death-rate of 1876-83 remarkably low (20·3); the present paper a continuation of that by Mr. N. A. Humphreys (*Statistical Journal*, vol. xlvi, p. 189) 221-2

Soundness of the "National system of vital statistics," and the figures relating to "Alleged causes of death;" fallacies to which the latter classification is liable 222-3

PAGE

LONGSTAFF (G. B.). *The Decline in the English Death-Rate—contd.*

Table showing rise or fall in the death-rates of England and Wales from various causes or groups of causes, 1875-79, compared with 1850-54, with remarks on errors from changes of nomenclature and classification; *tables* of 1861-70 and 1876-80 taken to minimise these errors; difference between the two sets of tables pointed out 223–24

Causes of death shown by *Table* A to have been decreasing: phthisis, developmental diseases, fever, dropsy, convulsions, scarlet-fever, small-pox, diphtheria, diarrhœa, measles, and whooping cough. 225–28

—— to have been increasing: lung diseases, heart diseases, dropsy, brain diseases, kidney diseases, and cancer 228–30

Diminishing death-rate can only fall to zero, an increasing one may rise indefinitely; conclusions drawn from foregoing facts 232–33

Necessity of considering the sex and age constitution of a population before comparing its death-rate with another population; desirability of a table of factors by which the death-rate of the principal towns could be reduced to the normal 233

Comparison of urban and rural death-rates; degeneration of race shown by deterioration of eyesight, &c. 234

Relative incidence of various causes of death upon males and females, with *table* showing excess of males and females at different groups of ages, together with their conjugal condition; discrepancy between married men and women 235–37

Effect of the decline of the death-rate upon the increase of the population . 237

Inferences drawn from the facts under review 238

Tables showing the death-rates from various causes, with percentages, &c., in groups of ages; averages of 1876-80 compared with averages of 1861-70 . 239–49

Discussion on Dr. Longstaff's Paper:

Bailey (A. H.)

Distrusted the materials from which the tables had been compiled, as the ages given in the census could only be taken as approximations, and there was also much difficulty about the causes of death. 249–50

Humphreys (N. A.)

If statisticians waited for perfect materials it would be a long time before any work was done; encouraging to sanitarians that there had been such a decrease in zymotic diseases and phthisis; change in the death-rate could not yet effect much change in the population, as the decrease for 1871-81 (5,000) would only make a difference of one-fifth of 1 per 1,000 in the annual death-rate; Dr. Longstaff's suggestion as to a table of factors had been anticipated, and would be found in the Registrar-General's summary for 1883; could speak confidently as to the amount of work in Dr. Longstaff's calculations, and the difficulties he had had to contend with 250–51

Rawson (Sir R. W.)

The uncertainty as to ages mentioned by Mr. Bailey prevailed over the whole period under discussion, and errors of that kind were found to balance one another 251

Lund (E.), of Manchester

In the factory districts, though there was high death-rate, the rate for middle life was not so high as might be anticipated; this was accounted for by the neglect of children through parents going out to work; in the north of England an endeavour was being made to record not only the cause of death but also of disease 251–52

Lawson (Robert)

Figures showing the decrease of phthisis and the increase of diseases of the lungs, 1868-69, which were opposed to Dr. Longstaff's statement that the increase in the latter was not equivalent to the decrease in the former; other statistics quoted to show the relation between the prevalence of pneumonia and the prevalence of phthisis 252–53

Hendriks (F.)

Advocated the adoption in England of a system of free certificates of birth, which might be preserved by the people, similar to the *acte de naissance* in France; gravest mistakes were made through the loose way in which ages were stated in the census 253–54

Humphreys (N. A.)

Persons with no special knowledge were not now often legal informants of registration of death; did not think the English people would preserve certificates of birth. 254

Bailey (A. H.)

In the return of ages there was a tendency to error in one direction, which was not corrected by numbers 254

PAGE

LONGSTAFF (G. B.). *Discussion on his Paper—contd.*
Giffen (R.)
Congratulated Dr. Longstaff on the excellence of his paper, and suggested that those gentlemen who objected to the data on which it was founded, should lay before the Society some return showing how the returned ages differed from the actual ages; the present paper established the fact that sanitary science had considerably decreased the death-rate from zymotic diseases; insufficient evidence at present to come to any conclusion as to Mr. Humphreys' interesting statement respecting the decline in mortality at the later ages 255–6
Longstaff (G. B.), reply:
None of the conclusions in the paper were invalidated by Mr. Bailey's criticisms; all ages over 75 had been put together, and all under 5 treated in a similar manner, as it is in these periods errors most often occur; as regards the connection between phthisis and diseases of the lungs, the curve for the former for forty years was approximately a straight line, whilst that for the latter was an irregular one; reasons given why Registrar-General's returns might be trusted. 257–8

remarks in discussion (Jeans on Earnings of Labour) . . 661
LUND, (E.). *Remarks* in discussion (Longstaff on Decline in English Death-Rate) 251
LUXURIES, taxation of. 9

MAHOMMED ALY, Improvements introduced into Egypt by . . 416
MANUFACTURES of the British empire 476
MARTIN (John Biddulph). *Electoral Statistics: a Review of the Working of our Representative System from* 1832 *to* 1881, *in view of Prospective Changes therein* 75

Introductory: Reference to papers in the *Journal* on electoral statistics by Mr. Newmarch, Mr. J. B. Martin, Mr. Hare, and Mr. Droop . . 75–6
Historical Sketch: Distribution of seats under Reform Acts of 1832 and 1867 and since, with *table* partly by Mr. B. Whitworth . . . 76–8
The Electorate: Cannot compare 1832 and 1881 on account of Act of 1867, 1861 therefore taken as intermediate point; *table* of population and electors, 1832, and 1861-62 79
Effects of "Boundary Act" of 1868 on both franchise and redistribution, with *table* 80–81
Table showing increase or decrease in the total population, and number of electors per 10,000 in England and Wales, Scotland and Ireland, respectively, from 1832-81 81
Present position and the conditions of the problem. *α. England and Wales:* Lunatics, paupers, criminals, and aliens (493,000), and adults (184,500), to be deducted from gross number of adult males (6,643,000) . . . 82–5
Electoral body almost exactly twice the importance in 1881 as compared with 1857; 60 per cent. of the whole adult male population still without electoral rights 86
Effects of assimilation of borough and county franchise in counties and boroughs 86–8
β. Ireland. Great decrease of population in Irish counties, and only slight increase in boroughs 88–9
Relative electoral strength in 1832 (11·32) and 1881 (7·45) . . . 89
Table showing the population in counties and boroughs in Ireland, the number of adult males, the number of electors, the ratio of electors per 10,000 adult males, the number of electors per member, and number of members returned to parliament in 1881; comparison of figures of above *table* with English boroughs and counties 90
Conclusion 92
Table showing the population, electors, ratios of population and electors to members in counties and boroughs (United Kingdom) 93
Table A, population, number of registered electors, and number of members in the United Kingdom from 1831-61 94–110
Tables A 1 to A 7 (with two *diagrams*) summarising the above *Table* A . 110–13
Memorandum of authorities whence the figures in the foregoing tables are derived 113–14
Papers, &c., on electoral statistics in the *Journal of the Statistical Society* . 114
Table showing the redistribution of seats between 1832-81 . . . 115

Discussion on Mr. J. B. Martin's Paper:
Chadwick (David)
Distribution of seats was an old subject with him, and one well worthy the attention of the Society; all alterations must be based on statistical facts;

PAGE

MARTIN (John Biddulph). *Discussion on his Paper—contd.*

Chadwick (David)—*contd.*

this he had shown to be the case in the Reform Bill of 1832; franchise should be the same in boroughs as in counties; population and property combined formed the best standard for adjusting parliamentary representation; his suggestion was that 15,000 population and property of the gross annual value of 50,000*l.* should be the minimum claim for one member 116–17

Martin (R. B.)

Real interest of the paper lay in the question whether the basis of votes shall be local, or whether they shall be based on equal electoral districts; question as to whether it might not be possible to arrange for the representation of minorities; if property, as Mr. Chadwick suggests, is to be represented, the various franchises, such as the 40*s.* freehold, should be retained . 117–18

Fowler (William)

Sensitiveness of boroughs as to redistribution; parliament would not take property as a qualification, but would make the franchise residential; many small boroughs would have to be absorbed, and places like West Ham, Croydon, and St. Helens should be made into boroughs; thought that a variety of constituencies was the best way of getting all classes represented, but was not in favour of either three-cornered constituencies or the cumulative vote 118–19

Pochin (H. D.)

Mr. Fowler had dwelt on the powers and duties of parliament; it was, however, the province of the Statistical Society to lay down a basis of correct principles on which parliament could act; he hoped the property qualification would be considered in discussing the franchise, and regretted that Mr. Martin thought the question should be settled by mere numbers . 119–20

Howell (George)

Thought the proposal that population should be the basis of redistribution the best part of the paper, and pointed out that population and wealth really went together; objected to cutting up large towns into wards, and preferred each elector being able to vote for one candidate only; redistribution would be much easier if the qualifications of electors were uniform 120

Burdett (H. C.)

In considering the electorate, the duplicates and the difference between the day and night population of large towns must be taken into account; in Birmingham result of next election uncertain, through the population retreating to the suburbs; representation of minorities would be solved if each voter were only allowed one vote 120–21

Elliott (H. T. W.)

Mr. Martin had not given a precise estimate of the number of new voters to be created by the assimilation of the county and borough franchise; if 2 million voters were added, the county and borough share of members should be 407 and 236 respectively, instead of 360 and 283 as at present . 121

Bourne (S.)

Differed from the two statements that population and wealth go together, and that it was the business of the Statistical Society to tell parliament what it ought to do in this matter; property ought to be considered as a qualification, as it was unfair that those who paid only a small part of the taxation should have an equal voice with those who contributed largely; seats might be distributed to areas according to the income of the district; was in favour of a variety of qualifications, and did not see why residence should be necessary for a vote 121–2

Hendriks (F.)

Objected to qualification from real property only 122

Bourne (S.)

Had referred to distribution according to income of voters, as it was from this the revenue was raised 122

Giffen (R.)

Subject of this paper very suitable for the Statistical Society; the difficulty as regards representation is that all arrangements require reconsidering at certain intervals, as population and wealth become transferred from one district to another; rather than take the last census as the basis for redistribution, an endeavour should be made to arrange property and wealth as they are likely to be in a few years, by this means a more lasting settlement would be obtained 122–23

PAGE

MARTIN (John Biddulph). *Discussion on his Paper—contd.*
Martin (John B.), reply:
The results of the paper were inadequate to the labour bestowed upon it; had not laid down any principle for the redistribution of electoral power, as the Government might have issued their Bill before the reading of this paper; no allusion had been made to property, as Mr. A. Ellis had already brought this before the Society; Mr. Elliott had misapprehended the figures as to county electors, the calculation was that they would be raised from 932,000 to 1,836,000 124

Media of Exchange: being some Notes on the Precious Metals and their Equivalents. (Read before the British Association, at Montreal, August, 1884) 485
The Bible, Aristotle, Goldsmith, and J. S. Mill on undue use of wealth . 485–6
The precious metals: reasons why gold and silver have been almost universally adopted as the basis of monetary systems . . . 486–8
Coin: differences between coin and bullion; wear and tear of coinage . 488–90
Origin of bank notes: danger of large issues of paper money; amount of bank note circulation per head in principal countries of Europe and in the United States; effects of contraction or expansion of paper money in any country. 490–93
Instruments of credit: banking system, comparison of this system in England and in France 493–4
Conclusion: advantages of the decimal system of coinage, and of a uniform system of measures 494–5

remarks in discussion (Poynting on Fluctuations in Price of Wheat, &c.) 73
remarks in discussion (Walford on Statistics of Canada) . . 344
remarks in discussion (Jeans on Earnings of Labour) . . 644
reply to vote of thanks to officers 413
MARTIN (R. B.). *Remarks* in discussion (Martin on Electoral Statistics) 117
METALS, Precious, notes on the, and their equivalents (see *J. B. Martin*) 485
METEOROLOGY. General Meteorological Table for 1883 [by James Glaisher] 202–3
MILLER (William). *Remarks* in discussion (Walford on Statistics of Canada) 339
remarks in discussion (Rabino on Statistics of Egypt) . . 464
spoke in discussion (Jeans on Earnings of Labour) . . . 663
MISSIONS to non-Christian nationalities 482
MONCRIEFF (Scott), reply to Rousseau Pacha's scheme for irrigation of Egypt 456
MONEY. Media of exchange, notes on the precious metals and their equivalents (see *J. B. Martin*) 485
MOWATT (James). *Remarks* in discussion (Willock on Express Trains) 306

NAVIES of the British empire 472
NECESSARIES, taxation of 9
NILE, Inundation of 451

PAUL (H. Moncreiff). *Remarks* in discussion (Poynting on Fluctuations in Price of Wheat, &c.) 70–71
remarks in discussion (Rabino on Statistics of Egypt) . . 465
remarks in discussion (Jeans on Earnings of Labour. . . 658
PAUPERISM in the British empire 480
see also *Registration.*
PEACE (Walter). *Remarks* in discussion (Jeans on Earnings of Labour) 660
PERSONAL PROPERTY. See *Property*
PHYLLOXERA, ravages of, and means taken in France to combat it . 355–6
progress of, stayed in France 610

PAGE

POCHIN (H. D.). *Remarks* in discussion (Martin on Electoral Statistics) 119
remarks in discussion (Jeans on Earnings of Labour) . . 662
His gift of 100*l.* for the best Essay on the Extent to which recent Legislation is in accordance with, or deviates from, the true principles of Economic Science 403
POLICE of the British empire 473
POPULATION of the British empire, with percentage of urban and rural population and average of population to area . . . 470–71
and finance of United Kingdom 4
POST OFFICE, number of letters posted in the world and in British empire 481
POTATO SPIRIT, used to fortify Spanish wine imported to France . 611
POWER (Edward). *Remarks* in discussion (Poynting on Fluctuations in Price of Wheat, &c.) 73
POYNTING (J. H.). *A comparison of the Fluctuations in the Price of Wheat and in the Cotton and Silk Imports into Great Britain* 34

Connection between sun spots and wheat harvest not yet satisfactorily made out; effect may be disguised by social, economical, or meteorological causes 34–5
Method of treating the statistics: to determine the fluctuations necessary to know whether the price is an average one for that time; the prices are averaged for ten years, so as to give a standard for each year; so many small irregularities that instead of taking the price of each year, the average of four years has been adopted 35–7
Fluctuations in wheat price at Delhi and in France very similar to English; price curve fairly represents the variations in the harvest . . . 37–9
Statistics of cotton imports in "Encyclopædia Britannica," ninth edition, treated in same way as those of the corn price; imports into Great Britain fairly represent actual crop; American war caused sudden increase in all other parts of the world 39–40
Silk imports, obtained from Messrs. Durant's Circular, treated as above; silk fluctuations slightly before those of cotton and corn; rise in 1871-72 simultaneous with rise in cotton; no statistics of total produce of silk . 41–2
Only curve which resembles sun spot curve is that of Chinese silk; early statistics of silk imports no indication of the China produce . . 42
Bank rate apparently resembles wheat price curve, except between 1860 and 1870 42
The direction of future inquiry should be into periodicities in the price of corn 42–3
Suggestion of Professor Stokes that the numerical process employed in averaging should be further investigated; general description of the mathematical examination made by him, and its results 43–7
Tables I—III: Price of wheat in England, 1756-1880; in Delhi, 1763-1835 (Jevons, "Nature," xix, 588); and in France, 1800-50, with the ten-yearly and four-yearly averages, and the percentage which the latter is of the former 48–50
—— estimated yield per acre of wheat in England, 1849-78 (Caird, *Journal of the Statistical Society*, 1879, p. 482) 51
—— wheat imports into England, 1830-80 ("Whitaker's Almanac," 1882, p. 424) 51
—— cotton consumed in Great Britain, 1801-76 ("Encyclopædia Britannica," ninth edition, vol. vi) 52
—— cotton imports into Great Britain 53–8
—— cotton crop, United States, 1821-78 ("Encyclopædia Britannica") . 55
—— silk imports into Great Britain, 1830-81 (Durant's Circular) . . 59–64
—— rate of discount at the Bank of England, 1840-81 64
Diagram showing in curves the statistics given in the above tables *facing* p. 48.

Discussion on Professor Poynting's Paper:
Rawson (Sir Rawson W.)
Before the reading of the paper, said its main object was a proposed statistical method of dealing with averages, founded to a great extent on a mathematical theory; the points to bear in mind were—whether the principle of the Professor's method was a correct one, and whether the periods adopted were generally applicable 65
Clarke (Hyde)
First drew attention to the ten-yearly period in a paper on "Physical Economy," published forty years ago; account of the processes adopted in that paper; ten-yearly period not one of astronomical exactness; interference of the larger cycle in attempts at predicting the incidents of agriculture and industry; sun spots, manifestations of cosmic laws, &c., in themselves have no effect on harvest 65–8

PAGE

POYNTING (J. H.). *Discussion on his Paper—contd.*

Rawson (Sir Rawson W.)

Pointed out that Professor Poynting had not suggested there were cycles or periods of prices 68

Clarke (Hyde), replied:

That his observations were not put into the mouth of Professor Poynting . 68

Bourne (S.)

Differed *in toto* from the Professor's conclusions; no relation between the gradation of prices of wheat in Delhi and in England; exception taken to the principle of averaging, ten-yearly and four-yearly periods entirely arbitrary ones; if other periods were selected divergent results were obtained 68–70

Paul (H. Moncreiff)

Conclusions as to relations between prices of wheat and cotton, and cotton and silk, not borne out by tables annexed to the paper; various conditions to be observed before accepting comparisons by average of different articles of produce 70–71

Elliott (H. T. W.)

Theory of common meteorological curve worth working out, but conclusions should be based on the actual yield rather than on a comparison of price 71

Hamilton (Rowland)

Impossible to attribute the fluctuations of prices in silk and cotton to a common cause; an historical inquiry into the causes affecting prices indispensable 72

Craigie (Major)

Professor Poynting's mathematical system of averaging did not suffice for the peculiar series of facts intended to be grouped; wheat crop dependent on weather of two or three months, more than that of whole year; satisfactory that the Government were attempting to obtain official records of the cereal produce of the United Kingdom 72

Martin (John B.)

What is an average? the various conditions obtaining at different periods increased the difficulties of averaging; Mr. Göschen's examination into the variations of general prices not fully made out 73

Power (Edward)

Professor Poynting's conclusions hardly in accordance with general experience; increased means of transport allowed abundant harvest in one part to supply deficiency in others 73

Poynting (J. H.), reply:

Speakers in the debate had insisted that yield ought to have been taken instead of price; in wheat he had taken price, but in cotton and silk the amount in bales; process of averaging not originally looked at mathematically; if the similarities in the curves could be explained by displacement, his meteorological theory must go to the wall 74

Rawson (Sir W. Rawson), [chairman]

Thanked Professor Poynting for his paper 74

PRECIOUS METALS. See *Metals.*

PRICE of commodities, fall in, its cause and effect (see *Paul Leroy Beaulieu*) 348

PRISONS. See *Public Institutions.*

PROPERTY, real and personal, taxation on 7

taxation on transfer of, by death 17

PROVISIONS. See *Registration.*

PUBLIC INSTITUTIONS. John Howard's experiences and opinions on the preservation and improvement of the health of the inmates of, as affected by structural arrangement (see *R. D. R. Sweeting*).

RABINO (Joseph). *Some Statistics of Egypt* 415

Annual charges of the Egyptian State, 8,920,129*l.* 416

Improvements that have been accomplished in the country mostly due to Mohammed Aly; registration figures in Egypt very untrustworthy. . 416–17

Population as given in the census and other publications, with mortality returns from epidemics 417–20

PAGE

RABINO (Joseph). *Some Statistics of Egypt—contd.*

Extension of the area of cultivated land chiefly owing to the introduction of constant irrigation; amount of public works executed, with *tables* showing work done, labour required and amount obtained, &c.; impossibility of dispensing with forced labour 420–25

Products: cotton, sugar, agricultural produce, with *tables*; comparison of estimates of Mulhall, Amici Bey, and the author as to total produce of the country 425–34

Imports: *tables* of value of chief imports, 1863-82; totals of exports and imports, 1874-83; and movement of specie, 1879-83 434–9

Finances: *table* of revenue and expenditure for 1883; Suez Canal the origin of the Egyptian debt; various estimates as to the cost of the canal to Egypt 439–41

Before law of liquidation was adopted (1880), no trustworthy figures to be obtained; revenue *tables* for 1880, 1881, and 1882, with remarks . . 441–4

In considering the land tax, the debts of the fellaheen and the impoverishment of the soil to be taken into account 444–7

Custom receipts, octrois, tobacco duties, railways and telegraphs, salt dues, &c. 447–51

Irrigation: schemes of Rousseau Pacha, Colonel Scott Moncrieff, and M. Lamotte. 451–8

Discussion on Mr. Rabino's Paper:

Clarke (Hyde)

Forced labour necessary for Egypt, and was preferred by the population; conflict of opinion as to irrigation works greatly increased the difficulty; no reason for tampering with English and French creditors; population industrious, and suited to country, but so-called improvements in the law, &c., had lately been introduced, which were quite unsuited to the people; advocated placing Egypt under the Indian Government . . 460–63

Levi (Leone)

No material progress in population of Egypt; annual expenditure 30 per cent. upon the production of the country 463–4

Miller (William)

Thought a land tax to meet Government expenditure would be a good thing in England 464

Hurst (George)

Population had greatly increased since the beginning of this century, despite the epidemics to which the country had been subjected: forced labour for the present was a necessity. 464–5

Paul (Moncreiff)

Returns of population for 1800 and 1882 could not be compared, as they were drawn from different sources; 9 per cent. not charged in Australia on mortgage as stated in the paper, but on clear over drafts without security . 465

Rawson (Sir Rawson W.)

Figures given in the paper were subject to much modification owing to their having been obtained from so many sources; system of forced labour in Egypt had resulted in misery and mischief to the people . . . 465–6

Rabino (J.)

Postscript in reply 466–7

RACES of the British empire 470

RAILWAYS. English Express Trains in 1871, and a comparison between them and those of 1883 (see *H. B. Willock*) . . . 259

of the British empire 477

RAWSON (Sir Rawson W.). *British and Foreign Colonies: being the Inaugural Address of the President of the Statistical Society, Session* 1884-85 547

Introductory remarks: amount of colonisation effected up to the time of the discovery of America and the passage to India *vid* the Cape, at the end of the fifteenth century 547–9

Sixteenth century: voyages of Columbus and of the Cabots to America; vicious policy of Spain towards her colonies; great success of Portugal in acquiring territory and establishing trade in Asia and Africa; extension of foreign territory and trade by Holland both in east and west . . 549–54

Seventeenth century: settlements in the West Indian Islands; colonisation of the northern continent of America by England and France; growth of British territory in India; settlements of England on the West Coast of Africa 554–8

Eighteenth and nineteenth centuries: change of ownership of West Indian Islands; occupation of small islands on the road to India; attempts at colonisation of Madagascar; rapid progress of New Zealand and Australia; annexation by England of Malta, Heligoland, the Falkland Islands, Aden, &c.; efforts for colonisation made by France since 1830 . . . 558–63

PAGE

RAWSON (Sir Rawson W.). *British and Foreign Colonies—contd.*

Germany, though possessing no colonial territory, has 10½ millions of people residing in foreign countries 563–4
Small numbers of emigrants sent out from France; arguments of M. Gaffarel for extensive colonisation 563–5
Summary *table* showing colonies and settlements of each country, with the mode of acquisition, and area of population. 565–6
Comparison of area and population of countries and their colonies, with explanatory *diagrams* 568–71
Comparison of the general trade of the different countries, with the trade of each country with its colonies, with *tables* and explanatory *diagrams* . 572–83
Table of the several colonies and foreign possessions of each European country, arranged in chronological order of their acquisition, with the date and mode of acquisition 584–91
Table of the area and population of the colonial possessions of each European country 592
Tables showing the amount and comparative growth of the trade of each European country having colonial possessions, and the proportion which such trade bears to the total trade 593–4
Table showing the trade of the United Kingdom with each of its principal colonies, showing imports and exports for 1874-76 and 1881-83, with the percentage increase or decrease 595
Detailed statement of the area, population, and date of acquisition, of the several colonial possessions of each European country 596–602
Table of number of German emigrants and their families in the principal countries of the world, and of the emigration to the United States from the United Kingdom, Germany, and France 603–4
Table of imports and exports into and from the several possessions of Great Britain 604–5

remarks in discussion (Poynting on Fluctuations in Price of Wheat, &c.) 65, 68, 74
remarks in discussion (Longstaff on Decline in English Death-Rate) 251
remarks in discussion (Willock on Express Trains) . . . 308
remarks in discussion (Rabino on Statistics of Egypt) . . 465
remarks on Howard Medal, and on change of abode of the Society, the Library Catalogue, and the death of the Duke of Albany . 606–7
remarks in discussion (Jeans on Earnings of Labour) . . 656

REAL Property. See *Property.*

REGISTRATION of the United Kingdom:
England and Wales:
marriages, births, and deaths 197–201
comparative *table* of consols, provisions, coal, and pauperism, 1881-83 199
general meteorological *table* for 1883, by James Glaisher . . 202–3
Scotland:
births, deaths, and marriages, with bastardy *table* . . . 204–7
Great Britain and Ireland:
summary of marriages, births, and deaths 207

RELIGIONS of the British empire 470

REPRESENTATIVE System [of Great Britain], review of its working from 1832-81, in view of prospective changes therein (see *J. B. Martin*). 75

REVENUE of the United Kingdom; Statistics from 1859-82, in relation to the distribution of Taxation (see *Levi*) 1
net produce in quarters and years, 1880-83 216
imperial and local, of the British empire 472

RHODES (J. G.). *Remarks* in discussion (Levi on Revenue in relation to Taxation) 26

ROUSSEAU Pacha. Scheme for irrigation of Egypt 452

ST. GEORGE'S HOSPITAL. See *Hospitals.*

SAVINGS BANKS in the British empire 480
Statistics 691
Letter from X. Y. Z. to the "Times" of 24th November, 1884, in reply to a speech made by Lord Dunraven, at Sheffield, pointing out that the "returns" used by his Lordship were not trustworthy.

PAGE

SCHOOLS. See *Public Institutions*
SCOTLAND. See *Registration.*
SELBY (Prideaux). *Remarks* in discussion (Levi on Revenue in relation to Taxation) 31
SHAW (Captain). Report on Fires in London for 1883. See *Fires.*
SHIPPING of the United Kingdom, 1881-83 212
of the British empire 474
SHIPWRECKS. *Lloyd's Statistics of Marine Casualties for* 1883 . 360–67

Table showing number of wrecks and casualties to sailing vessels and steamers in 1883, compared with the seventeen previous years, with results to ship and to cargo, salvage services, crews saved or drowned, lives lost, and respective percentages 360–67

SILK IMPORTS. Fluctuations in the price of (see *Poynting*) . . 34
industry, comparison of in different countries 619
SILOS. See *Agriculture.*
SILVER. Reasons of its adoption for monetary purposes . . . 486
see also *Bullion.*
SPAIN, the present position of, compared with other European countries (see *P. A. Delboy*) 150
SPECIE. See *Bullion.*
STATISTICAL SOCIETY:
report of Council, June, 1884 395
abstract of receipts and payments for 1883, with auditors' report. 406
comparative financial statement of 1883 with that of previous years 396–7
proceedings at ordinary meetings, with titles of papers read . 398–400
proceedings of the fiftieth anniversary meeting . . . 409–14
list of deceased Fellows during 1883-84 404
opening inaugural address of the President, November, 1884 (see *Rawson*) 547
proceedings at the November meeting, 1884 606
letter from Lord Edmond Fitzmaurice, with circular dispatch sent out from the Foreign Office, relating to the forthcoming celebration of the Society's jubilee 695–6
see also *Library.*
STOCK (Live). See *Agriculture.*
STOKES (Professor G. G.). Mathematical examination of the process of averaging as used in Professor Poynting's paper 43–7
SUGAR, taxes on 14
SUN SPOTS, connection with price of wheat 34–5
SWEETING (R. D. R.). *The Experiences and Opinions of John Howard on the Preservation and Improvement of the Health of the Inmates of Schools, Prisons, Workhouses, Hospitals, and other Public Institutions as far as Health is Affected by Structural Arrangements relating to Supplies of Air and Water, Drainage, &c.* [abstract of Howard Prize Essay for 1883] 125

Howard's experiences and opinions as regards air: (*a*) site; (*b*) ventilation; with *tables* of cubic space and superficial space in various hospitals and gaols, and remarks 124–33
Water: quantity and quality of water supply; cleanliness of buildings and personal cleanliness 133–5
Drainage, construction, warming, disinfection, clothing, and bedding; isolation of the sick; food and exercise 135–9
Conclusion and bibliography 139–41

TAXATION. *Local Taxation Returns* (*England*) *for the Year* 1881-82 374

Tables of amounts received and expended by various local authorities; aggregate amounts of rates levied and of outstanding loans at the close of each year, 1877-82; local taxation summary, 1880-81 and 1881-82 . . 374–80

statistics of the revenue of the United Kingdom from 1859-82, in relation to the distribution of taxation (see *Levi*) . . . 1
incidence on the higher, middle, and working classes . . . 19

PAGE

TEA, taxes on 14
TELEGRAPHS of the British empire 478
TEMPLE (Sir Richard). *The General Statistics of the British Empire. Address delivered before Section F of the British Association, at Montreal, August*, 1884 468

Area of British empire and lands under British control; coast line, climate, area capable of cultivation, forests, population, races, religions, percentage of urban to rural population, average of population to area . . 468–72
Imperial and local revenue, armies, navies, merchant shipping, and police, trade, banking, manufactures, factory and steam power, wealth, railways, electric telegraphs, and canals 472–8
Public debt, crime, emigration, pauperism 478–80
Savings banks, life insurance, charitable expenditure, in-patients in hospitals, post office, education, religious missions 480–82
Inferences drawn from preceding statistics 482–4

DE TRACY (—). Difference between "Science" and "Art" . . 2
TRADE. Comparison of the general trade of countries possessing colonies with the trade of each country with its colonies (see *Sir R. W. Rawson* 572–83
of the British empire 475
of the United Kingdom. See *Exports, Imports.*
TRAINS. See *Railways.*

UNITED KINGDOM. See *Revenue.*
UNITED STATES, Immigration into the (see *Armand Liégeard*). . 496

VESSELS. See *Shipping.*
losses of. See *Shipwrecks.*

WAGES. See *Labour.*
WALES. See *Registration.*
WALFORD (Cornelius). *A Statistical Review of Canada, including its Confederated Provinces* 312

Introduction; importance of the Canadian Pacific Railway; statistics in the present paper made up to the year 1879, and then compared with subsequent returns 312–14
Fisheries, fur trade, lumber trade (timber), landowners and agricultural holdings, agricultural produce, live stock, meat supply; mineral products . 315–21
Population: *tables* showing increase in each province between 1871 and 1881, and also density of population and proportion of the sexes . . . 322–4
Immigration, with nationalities of the European immigrants . . . 324–6
Manufacturing industries; shipbuilding; vessels owned; canals; railways; trade and navigation generally, with *table* of exports and imports . . 326–31
Educational statistics; post office; public debt; revenue; savings banks; conclusion 331–5

Discussion on Mr. Walford's Paper:

Bourne (S.)

The question of how to provide for our surplus population now being forced upon our statesmen; Canada well suited for this from its large area, agricultural resources, and mineral wealth; the policy of the Canadian Government was at present in favour of protection, though the speaker thought free trade would ultimately prevail; at present large sums were being expended in Canada for future rather than for present supply; Mr. Walford in error as regards the value of Canadian exports . . 336–9

Miller (William)

Canada had cost Great Britain the whole of the national debt; emigration was all at the expense of this country without any return from Canada; no mutual interest between the two countries, as shown by there being no person connected with Canada on the council of the Chamber of Commerce 339–40

Hall (E. Hepple)

Canada could well compete with America as a wheat-growing country, the average in the North West Territory being from 18 to 20 bushels per acre, whilst in the United States it was not more than 11; the wheat grown in the Red River and Old Selkirk settlements could be put down in Liverpool

PAGE

WALFORD (Cornelius). *Discussion on his Paper—contd.*

Hall (E. Hepple)—*contd.*

for 28 cents per bushel; though the forests were in process of depletion, trees had been successfully planted in the prairies; there was a constant drift of population from the States to Canada, and from Canada to the States, so that an even balance was kept; importance of canals, and growth of post office 340–42

Cohen (L. L.)

Combated the statements made in the discussion that Canada had cost us 200 millions, and that the land of Canada had been filched from the people of this country; no cause for apprehension with regard to Canada going on at too rapid a rate 342–4

Martin (J. B.)

The increase in the fur trade was coincident with a decline in the shares of the Hudson's Bay Company, this, however, was accounted for by the Company having speculated in land; the climatic effect of the destruction of forests must not be forgotten; the object of the visit of the British Association should be to find out the resources of the country . . 344–5

Hamilton (R.)

Would like to know the conditions under which the large yields were obtained 345

Bateman (A. E.)

Took exception to Mr. Bourne's statement as to yield and also the tables of revenue, &c. 346

Walford (C.), reply:

Had taken all his figures from the best official sources, and had originally prepared a statement showing how the different provinces of Canada had been acquired by this country, but this was omitted from the paper; could not well compare productiveness with the United States, as each State claimed greater productiveness than its fellows 346–7

remarks in discussion (Levi on Revenue in relation to Taxation). 32

remarks in discussion (Jeans on Earnings of Labour) . . 657

WEALTH of the British empire 477

WEBB (F. W.). *Remarks* in discussion (Willock on Express Trains) 305

WHEAT, comparison of the fluctuations of its Price with those of the cotton and silk imports into Great Britain (see *Poynting*) . 34

WHITWORTH (Benjamin). *Remarks* in discussion (Jeans on Earnings of Labour) 661

WILLIAMS (R. Price). *Remarks* in discussion (Willock on Express Trains) 300–303

remarks in discussion (Jeans on Earnings of Labour) . . 603

WILLOCK (H. B.) *English Express Trains in* 1871, *and a Comparison between them and those of* 1883 259

Method of obtaining statistics for 1883, and their comparison with those of Mr. Foxwell for 1871 259–60

Definition of an express in 1883 (journey-speed of at least 40 miles per hour) and in 1871 (36 miles per hour) 261–2

Number of distinct express trains run by each company in 1871 compared with 1883; *tables* showing time, journey-speed, running-average, total mileage, &c. 263–87

Table showing length of line owned and length of line on which expresses ran by each company in 1871 and 1883, with remarks . . . 288–9

Table of number and mileage of expresses run by each company, with speed for 1871 and 1883 290

—— of companies according to their running speed 291

—— of average number of express journeys on each mile . . . 292

Tables of long runs, fastest runs, towns best supplied with expresses, quickest time between London and important towns. 293–7

Increased weight of express trains and improvement in railway service between 1871-83 297–9

Discussion on Lieutenant Willock's Paper:

Williams (R. Price)

Railway travelling had undergone a complete revolution between 1871 and 1883 through the conveyance of third class passengers by express trains; in addition to this, the working of slow and fast trains on the same rails, and the great increase in the goods and mineral traffic retarded the speed of express trains; effect of gradients, ascending and descending, on these trains; continuous breaks, steel rails, and steel boilers helped to accelerate speed 300–303

PAGE

WILLOCK (H. B.). *Discussion on his Paper—contd.*

Johnstone (E. M. M.), of Dublin

Made a few remarks 303

Findlay (George)

Development of third class traffic had been mainly for short distances; if the express traffic were run on solely commercial principles trains would be much less frequent; statistics of weight and length of limited mail, and of third class earnings on Midland, Great Western Railway, and London and North Western Railway; competition between different companies better for the public than if the railways were taken over by the State . . 303–5

Webb (F. W.)

Had constantly to contend with the increased weight of trains; London and North Western Railway favourably situated with regard to gradients, and its trains pick up their water at full speed; by building compound engines he hoped to make water and fuel go farther; statistics of work done by London and North Western Railway engines 305

Foxwell (E.)

Agreed that passengers were better off than if the Government had the railways, but thought that time might be saved in putting in lamps and luggage 306

Mowatt (James)

1871 not a good year to take for South Eastern continental trains, owing to the Franco-German war only just having ceased; before the war the mail from London to Dover ran at 44 miles per hour, and in 1862 the journey from London to Paris was made in 9¼ hours; no necessity for more than two classes 306–7

Giffen (R.)

In proposing vote of thanks, said that trade and education had both benefited by the improved means of communication 307–8

Rawson (Sir R. W.)

Asked Mr. Findlay and Mr. Webb to give in their tables as an appendix to the paper 308

Willock (H. B.), reply:

In 1871 more third class traffic on the northern than on the southern and western lines; he thought it would be a bad thing if the railways were managed by one body 308

Appendix to Discussion:

Diagram showing length and weight of the limited mail in 1864, 1874, 1884 . 308

Table: passenger traffic, London and North Western Railway, Midland, and Great Northern Railway 309

—— passenger train mileage, earnings, and receipts, London and North Western Railway, Midland, and Great Western Railway . . . 310–11

WINE, changes required in the mode of levying duties on. . . 13

production in France (see *Bateman*) 609

WOOL and Worsted Industry, comparison of, in different countries . 619

WORKHOUSES. See *Public Institutions.*

WORKING CLASSES. See *Earnings.*

YOUNG (Frederick). Seconded vote of thanks to the President for his address 607

Z., X. Y. Letter to the "Times" on Savings Banks Statistics . . 691

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(Corrected to 31st December, 1884.)

STATISTICAL SOCIETY.

(FOUNDED 1834.)

9, ADELPHI TERRACE,

STRAND, W.C., LONDON.

Contents.

	PAGE
COUNCIL AND OFFICERS	2
OBJECTS OF THE SOCIETY	3
CALENDAR FOR SESSION 1884–85	4
PROGRAMME OF THE SESSION 1884-85	5
COST OF BACK NOS. OF JOURNAL (*if not out of Print*).	6
LIST OF THE FORMER PATRON AND PRESIDENTS	7
Do. FELLOWS	8
Do. HONORARY MEMBERS	48
INDEX TO RULES	55
RULES OF THE SOCIETY	56
REGULATIONS OF THE LIBRARY	60
DONORS TO THE LIBRARY DURING THE YEAR 1884.	61
ODD NUMBERS, PARTS AND VOLUMES OF WORKS, WANTING IN THE LIBRARY	66
FORM OF BEQUEST	76

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1885.

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The Society from its inception has steadily progressed. It now possesses a valuable Library and a Reading Room; ordinary meetings are held monthly from November to June, which are well attended, and cultivate among its Fellows an active spirit of investigation: the papers read before the Society are, with an abstract of the discussions thereon, published in its *Journal*, which now consists of forty-seven annual volumes, and forms of itself a valuable library of reference.

The Society has originated and statistically conducted many special inquiries on subjects of economic or social interest, of which the results have been published in the *Journal* or issued separately.

To enable the Society to extend its sphere of useful activity, and accomplish in a yet greater degree the various ends indicated, an increase in its numbers and revenue is desirable. With the desired increase in the number of Fellows, the Society will be enabled to publish standard works on Economic Science and Statistics, especially such as are out of print or scarce, and also greatly extend its collection of Foreign works. Such a well-arranged Library for reference, as would result, does not at present exist in England, and is obviously a great *desideratum*.

The Society is cosmopolitan, and consists of Fellows and Honorary Members, forming together a body, at the present time, of nearly *one thousand* Members.

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The Ordinary Meetings of the Society, at which Papers are read and discussed, are marked in the Calendar above by Black Figures.

The Chair will be taken at 7.45 *p.m., precisely.*

These Meetings are now held, by permission of the Committee of Council on Education, in the **Theatre of the Royal School of Mines, 28, Jermyn Street, S.W.**

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WILL BE HELD ON THE 23RD JUNE, 1885, AT 4 P.M.

STATISTICAL SOCIETY.

MONTHLY MEETINGS—Session 1884-85.

HELD ON THE

THIRD TUESDAY IN THE MONTHS OF NOVEMBER—JUNE.

Tuesday, Nov.	18.	Tuesday, March	17.
,, Dec.	16.	,, April	21.
,, Jan.	20.	,, May	19.
,, Feb.	17.	,, June	16.

At the Royal School of Mines, Jermyn Street, S.W.

The following Papers have been read (December, 1884):—

"British and Foreign Colonies," the PRESIDENT'S Inaugural Address on opening the Session. By SIR RAWSON W. RAWSON, K.C.M.G., C.B. (Delivered in November.)

"On the Comparative Efficiency and Earnings of Labour at Home and Abroad." By J. S. JEANS, Esq. (Read in December.)

The Council have reason to expect that in the course of the Session the following Papers will, among others, be communicated to the Society:—

"Further Notes on the Progress of the Working Classes." By ROBERT GIFFEN, Esq., LL.D.

"The History of the Statistical Society." By Dr. F. J. MOUAT, F.R.C.S.

"Thirty Years' Changes in the Occupations of the People." By G. PHILLIPS BEVAN, Esq., D.L.

"Changes in the Trade Population of London." By R. PRICE-WILLIAMS, Esq.

"Friendly Societies and Similar Institutions." By E. W. BRABROOK, Esq.

"The Laws of Migration." By E. G. RAVENSTEIN, Esq., F.R.G.S.

"Method of Statistics." By F. Y. EDGEWORTH, Esq., M.A.

"The Economic Resources of the Dominion of Canada." By STEPHEN BOURNE, Esq.

"Some Statistics of British Longevity." By CORNELIUS WALFORD, Esq., F.I.A.

"Mortality from Small Pox in England and Wales." By FREDERICK DAY ASKEY, Esq.

"Population Statistics of China." By Sir RICHARD TEMPLE, Bart., G.C.S.I., D.C.L., LL.D.

"The Trade of Marseilles." By ARCHIBALD J. DUNN, Esq.

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By a resolution of the Council, dated 12th May, 1854, the price of back numbers of the *Journal* of the Society, charged to Members, was raised from one-half to three-fifths of the publishing price.

NOTE.—One or two numbers of the *Journal* are now out of print.

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OF THE

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From its Foundation, on 15th March, 1834.

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1883	Barron, Thomas Walter, M.A., M.B., M.R.C.S., &c., 10, *Old Elvet, Durham.*
1878	Barry, Francis Tress, *St. Leonard's-hill, Windsor.*
1879	Barry, Frederick W., M.D. *Local Government Board, Whitehall, S.W.*
1881	Bartlett, Robert Vincent Osborne, *Richmond Villa, Castle-road, Newport, Isle of Wight.*
1872	*Bass, Sir Michael Arthur, Bart., M.P., 101, *Eaton-square, S.W.; Rangemore, Burton-on-Trent.*
1873	Bate, George, 37, *Bath-street, Glasgow.*
1877	Bateman, Alfred Edmund (*Secretary*), *Board of Trade, Whitehall-gardens, S.W.*
1876	Baxter, Robert, 6, *Victoria-street, Westminster, S.W.*
1877	Bayfield, Arthur, 32, *Temple-row, Birmingham.*
1873	*Baynes, Alfred Henry, F.R.G.S., 19, *Castle-street, Holborn, E.C.*
1871	*Baynes, William Wilberforce, F.I.A., 32, *Moorgate-street, E.C.*
1877	Beadel, William J., *Springfield Lyons, Chelmsford.*
1875	*Beardsall, Francis E. M., 44, *Brown-street, Manchester.*
1878	*Beauchamp, The Right Hon. Earl, 13, *Belgrave-square, S.W.*
1875	*Beaufort, William Morris, F.R.A.S., F.R.G.S., &c., 18, *Piccadilly, W.*

Year of Election.	
1883	Beaumont, Henry *Gordon Villa, The Park, Highgate, N.*
1882	*Beazeley, Michael Wornum, 3, *St. Paul's-road, Thornton Heath, Surrey.*
1883	Beckingham, James Horace, 48, *Percy Park, Tynemouth, Northumberland.*
1880	Beddell, Charles, *Hotham House, Merton Abbey, Surrey.*
1872	*Bedford, His Grace, the Duke of, *Woburn Abbey, Oakley, Bedford.*
1884	Bedford, James, *Woodhouse Cliff, Leeds.*
1882	*Beeton, Henry Ramie, 42, *Belsize-square, South Hampstead, N.W.*
1884	Begg, Alexander, 88, *Cannon-street, E.C.*
1879	Beggs, Thomas, 55, *Russell-square, W.C.*
1880	Bell, Isaac Lowthian, J.P., *Rounton Grange, Northallerton, York, N.R.*
1884	Bell, James T., 3, *Great Kelvin-terrace, Hillhead, Glasgow.*
1878	Bellew, The Right Hon. Lord, *Barmeath, Dunleer, Ireland*
1883	Bennoch, Francis, F.S.A., 5, *Tavistock-square, W.C.*
1884	*Bentley, Richard, F.R.G.S., *Upton, Slough, Bucks,*
1856	*Beresford-Hope, The Right Hon. Alexander J., M.P., D.C.L., 1, *Connaught-place, W.*
1884	Berg, Wilhelm, 37, *Mincing-lane, E.C.*
1884	Bernard, W. Leigh, 1, *New-court, Lincoln's-inn, W.C.*
1874	Bessborough, The Right Hon. The Earl of, *Bessborough, Pilltown, Ireland.*
1881	Besso, Marco, *Compagnia di Assicurazioni Generali, Trieste.*
1879	Bevan, G. Phillips, D.L., F.G.S., *Uplands, Richmond, Surrey.*
1875	Bevan, Thomas, *Stone Park, near Dartford, Kent.*
1869	*Beverley, Henry, *United Service Club, Calcutta.*
1879	*Bickford-Smith, W., J.P., D.L., &c., *Trevarno, Helston, Cornwall.*
1883	Binney, William, 13, *St. Helen's-place, E.C.,; Hillfield, Hampstead, N.W.*
1884	Birch, Robert W. Peregrine, M. Inst. C.E., 2, *Westminster-chambers, Victoria-street, S.W.*

Year of Election.

1883 Birchenough, Henry, M.A.
145, *Cheapside, E.C.*

1881 Bishop, George,
131, *Powis-street, Woolwich.*

1877 Bishop, George Houlton, M.R.C.S.,
47, *Argyle-road, Castle-hill, Ealing, W.*

1883 Blades, R. H.,
23, *Abchurch-lane, E.C.*

1883 Blades, William,
23, *Abchurch-lane, E.C.*

1873 Bogie, James,
5, *March Hall-road, Newington, Edinburgh.*

1884 Boileau, John P. H., M.D., &c. (*Surgeon-Major*),
Army Medical Department, Allahabad, India.

1881 Bolitho, Thomas Robins,
Pendrea, near Penzance.

1880 Bolton, Joseph Cheney., M.P.,
Carbrook, Larbert, Stirlingshire.

1879 Bordman, Thomas Joseph Clarence Linden, LL.D.,
Victoria House, Trinity-street, Southwark, S.E.

1875 Borthwick, The Right Hon. Lord,
Ravenstone, Whithorn, Wigtonshire, N.B.

1881 Bourdillon, James Austin,
United Service Club, Calcutta.

1881 Bourinot, John George,
Ottawa, Canada.

1871 Bourne, Stephen (*Vice-President*),
H.M. Custom House, E.C.; Abberley, Wallington, Surrey.

1877 Boutcher, Emanuel,
36, *Hyde Park-gardens, W.*

1883 Bovey, John,
Bute Docks, Cardiff, and Glenholm, Penarth, Cardiff.

1876 Bowen, Horace George,
Bank of England, E.C.

1879 Bowley, Edwin,
Burnt Ash-hill, Lee, Kent.

1880 Bowser, Wilfred Arthur,
33, *New Bridge-street, E.C.*

1883 Braby, Frederick, F.C.S., F.G.S.,
Bushey Lodge, Teddington.

1875 Braby, James, J.P.,
Maybanks, Rudgwick, Sussex.

1874 Bramley-Moore, John, D.L.,
Gerrard's-cross, Bucks.

1873 Brassey, Sir Thomas, K.C.B., M.A., M.P.,
(*Honorary Vice-President*),
4, *Great George-street, S.W.; and* 24, *Park-lane, W.*

1864 *Braye, The Right Hon. the Lord,
40, *Grosvenor-street, W.; Stanford Hall, Rugby.*

1884 Breckon, John Robert,
Park-place, Sunderland.

Year of Election.

1883 Briesemann, Francis,
Whittington-avenue, Leadenhall-street, E.C.

1883 Brindle, Thomas,
North Bank, Tunbridge Wells.

1883 Broad, Harrington Evans,
Warlingham, Surrey, and 35, *Walbrook, E.C.*

1876 Brodhurst, Bernard Edward, F.R.C.S.,
20, *Grosvenor-street, Grosvenor-square, W.*

1883 Brooke, C. B.,
16, *Leadenhall-street, E.C.*

1874 Broom, Andrew, A.C.A.,
12, *Wilton-terrace, The Grove, Camberwell, S.E.*

1878 Brown, Alexander Hargreaves, M.P.,
12, *Grosvenor-gardens, S.W.*

1872 Brown, James Bryce, F.R.G.S.,
90, *Cannon-street, E.C.; and Bromley, Kent.*

1875 Browne, Thomas Gillespie C., F.I.A.,
11, *Lombard-street, E.C.*

1884 Browne, Willis,
Funds Department, India Office, Westminster, S.W.

1883 Buck, E. C.,
Revenue and Agricultural Department, Simla, India.

1865 Bunce, John Thackray,
Longworth, Priory-road, Edgbaston, Birmingham.

1884 Burbridge, Samuel,
9, *Blomfield-street, E.C.*

1880 Burdett, Henry Charles,
39, *Gloucester-road, Regent's-park, N.W.*

1873 *Burdett-Coutts, The Right Hon. the Baroness,
1, *Stratton-street, W.; and Holly Lodge, Highgate, N.*

1884 Burdett-Coutts, William,
1, *Stratton-street, Piccadilly, W.*

1882 Burgess, John,
Prospect House, Hailsham.

1872 Burns, The Rev. Dawson, M.A., D.D.,
15, *Great George-street, Westminster, S.W.*

1880 Burt, Frederick, F.R.G.S.,
Woodstock, Crouch End, N.

1883 Bush, William John,
20, *Artillery-lane, Bishopsgate-street, E.C.*

1882 Butchart, Robert G.,

1884 Buxton, Sydney Charles, M.P.,
15, *Eaton-place, S.W.*

Year of Election.	
1880	Caine, William Sproston, M.P., 1, *The Terrace, Clapham Common, S.W.*
1857	Caird, Sir James, K.C.B., F.R.S., (*Honorary Vice-President and Trustee*), 8, *Queen's-gate-gardens, S.W.; & Cassencary, Creetown, N.B.*
1880	Caird, Robert Henryson, 6, *Petersham-terrace, S.W.*
1879	Campbell, Lord Colin, M.P., 79, *Cadogan-place, S.W.*
1874	Campbell, Sir George, K.C.S.I., M.P., D.C.L., 17, *Southwell-gardens, South Kensington, S.W.*
1877	Campbell, George Lamb, *Market-street, Wigan.*
1879	Campbell-Colquhoun, Rev. John Erskine, *Chartwell, Westerham, Kent.*
1884	Card, Henry Curtis, F.S.I., *County Surveyor's Office, Lewes.*
1881	Carden, Lionel Edward Gresley, (*H.M. Consul*), *Havana, Cuba, West Indies.*
1872	*Carillon, J. Wilson, F.S.A., F.R.G.S., 11, *Aynhoe-road, Hammersmith, W.*
1871	Carnac, H. Rivett-, *Calcutta, Bengal, India.*
1876	Carphin, James Rhind, C.A., 14, *Hanover-street, Edinburgh.*
1877	Carter, E. Harold, 33, *Waterloo-street, Birmingham.*
1883	Carter, Joseph Robert, *Bessel's Green, Sevenoaks; and Stock Exchange, E.C.*
1878	*Casley, Reginald Kennedy, M.D., *Northgate-street, Ipswich.*
1880	Castle, Robert, 18, *Merton-street, Oxford.*
1883	Cater, J. J., 39, *Lombard-street, E.C.*
1883	Cattarns, Richard, *Enfield House, Grove Park, Lee, S.E.*
1881	Causton, Richard Knight, M.P., 3, *Clanricarde-gardens, W.*
1858	Chadwick, David, *The Poplars, Herne Hill, Dulwich, S.E.*
1834	Chadwick, Edwin, C.B., (*Corr. Mem., Inst. of France*). *Park Cottage, East Sheen, Mortlake, S.W.*
1869	Chadwick, John Oldfield, F.R.G.S., 24, *Budge-row, Walbrook, E.C.*
1884	Chailley, Joseph, 7, *Rue Lobineau, Paris.*
1880	*Chamberlain, The Right Honourable Joseph, M.P., 40, *Prince's-gardens, S.W.*

Year of Election.	
1884	Chater, J., *c/o* Patrick McGuire, 57, *Amherst-street, Calcutta.*
1851	*Cheshire, Edward, 3, *Vanbrugh Park, Blackheath, S.E.*
1883	Childs, Walter, 16, *Oxford-gardens, North Kensington, W.*
1853	Chisholm, David, F.I.A., 64, *Princes-street, Edinburgh.*
1869	Chubb, Hammond, B.A., (*Vice-President*), *Bickley, Kent.*
1849	Clark, Gordon Wyatt, *Mickleham Hall, near Dorking, Surrey.*
1856	Clark, Sir John Forbes, Bart., *Tillypronie, Tarland, Aberdeen.*
1884	Clark, Robert, 223, *Cromwell-road, S.W.*
1882	Clarke, Arthur Edward, *Wisbech.*
1871	Clarke, Ebenezer, jun., 52, *Cannon-street, E.C.*
1882	*Clarke, Ernest, *Share and Loan Department, Stock Exchange, E.C.*
1880	Clarke, Frederick Nevill, *Oakwood, Fountain-road, Upper Norwood, S.E.*
1877	*Clarke, Henry, L.R.C.P., *H.M. Prison, Wakefield, Yorks.*
1876	Clarke, Henry Harcourt Hyde, 32, *St. George's-square, S.W.*
1856	*Clarke, Hyde (*Vice-President*), 32, *St. George's-square, S.W.*
1869	Cleghorn, John, 3, *Spring-gardens, S.W.*
1850	*Cleveland, His Grace the Duke of, K.G., *Battle Abbey, Sussex.*
1853	Clirehugh, William Palin, F.I.A., 66, *Cornhill, E.C.*
1877	Cobb, B. Francis, 79, *Cornhill, E.C.*
1873	Cockle, Captain George, F.R.G.S., 9, *Bolton-gardens, South Kensington, S.W.*
1884	Cockshott, John James, 3, *Tulketh-street, Chapel-street, Southport.*
1877	Cohen, Lionel Louis, 9, *Hyde Park-Terrace, W.*
1838	Colebrooke, Sir Thomas Edward, Bart., M.P., 14, *South-street, Park-lane, W.*
1859	Coles, John, F.I.A., 39, *Throgmorton-street, E.C.*
1874	Collins, Eugene, M.P., 38, *Porchester-terrace, Hyde Park, W.*

Year of Election.	
1877	Collins, J. Wright, J.P. (*Colonial Treasurer*), *Stanley, Falkland Islands.*
1874	Collinson, John, F.R.G.S., 90, *Cromwell-road, S.W.*
1883	Collmann, John S., 12, *Tokenhouse-yard, E.C.*
1882	*Collum, Rev. Hugh Robert, M.R.I.A., F.R.C.I., *Vicar of Leigh, near Tonbridge, Kent.*
1867	Colman, Jeremiah James, M.P., *Carrow House, Norwich.*
1878	Colomb, Captain J.C.R., R.M.A., J.P., *Droumquinna, Kenmare, Kerry.*
1884	Colyar, Henry Anselm De, 24, *Palace-gardens-terrace, W., and Athenæum Club, S.W.*
1884	Cook, Edward Samuel, 60, *Queen Victoria-Street, E.C.*
1879	Cooke, Isaac B., 8, *Wellington-road, Oxton, Birkenhead.*
1874	*Cookson, Faithful, F.R.G.S., 12, *Grafton-square, Clapham, S.W.*
1879	Cooper, William John, 7, *Westminster-chambers, Victoria-street, S.W.*
1843	*Copperthwaite, William Charles, *New Malton, Yorkshire.*
1874	Corbett, John, M.P., 20, *Hertford-street, Mayfair, W.*
1883	Corgialegno, M., 71, *Cornhill, E.C.*
1873	Cork, Nathaniel, F.R.G.S., 39, *Lombard-street, E.C.*
1878	Cornish, William Robert, F.R.C.S. (*Surgeon Major*), *Sanitary Commissioner, Madras.*
1883	Cosens, Frederick William, 7, *Melbury-road, Kensington, W.*
1862	Courtney, Leonard Henry, M.A., M.P., 15, *Cheyne Walk, Chelsea, S.W.*
1882	Cowen, Charles, 37, *Main-street, Port Elizabeth, Cape of Good Hope.*
1873	Cowper, The Hon. Henry Frederick, M.P., 4, *St. James's-square, S.W.*
1880	Craig, William Young, M.P., *Palace Chambers, St. Stephen's, Westminster, S.W.*
1874	Craigie, Major Patrick George, 6, *Lyndhurst-road, Hampstead, N.W.*
1870	Craik, George Lillie, 29, *Bedford-street, Strand, W.C.*
1883	Cranwell, W. B., 42, *Portsdown-road, W.; and* 4, *Finsbury-street, E.C.*
1872	Crellin, Philip, 33, *Chancery-lane, W.C.*

Year of Election.

1883 Crew, J. Lewis,
113, *Arch-street, Philadelphia, Pennsylvania, U.S.A.*

1878 Crewdson, Ernest,
5, *Norfolk-street, Manchester.*

1880 *Crompton-Roberts, Charles H.
16, *Belgrave-square, S.W.*

1876 Crosse, John Burton St. Croix, F.R.C.S.,
Royal Military Asylum, Chelsea, S.W.

1883 Cullen, Thomas, F.C.A.
9, *George-street, Hanover-square, W.*

1875 Cunningham, David, C.E.,
Works' Office, Harbour-chambers, Dundee.

1883 Cunningham, Rev. William, M.A.,
2, *St. Paul's-road, Cambridge.*

1884 Curtis, Charles, Edward,
Deanyers, Alton, Hants.

1879 Curtis, Robert Leabon, F.S.I.,
120, *London Wall, E.C.*

1873 Czarnikow, Cæsar,
Mitcham, Surrey.

1869 Dalyell, The Hon. Robert Anstruther, C.S.I.,
India Office, Westminster, S.W.

1884 Daniell, Clarmont J.,
Agra, India, c/o H. S. King & Co., 65, *Cornhill, E.C.*

1880 Danvers, Frederick Charles,
India Office, Westminster, S.W.

1873 Danvers, Juland,
India Office, Westminster, S.W.

1869 Davies, James Mair,
Chambers, 69, *West Regent-street, Glasgow.*

1874 Davies, William Henry,
51, *Tregunter-road, S.W.*

1873 Dawson, James Thomas,
79, *Cornhill, E.C.*

1876 Day, William Ansell,
Lyndhurst House, Hendon, N.W.

1880 Debenham, Frank,
26, *Upper Hamilton-terrace, St. John's Wood, N.W.*

1879 *De Ferrieres, The Baron Du Bois, M.P., J.P.,
Bay's-hill House, Cheltenham.

1884 De Jouy, J. Henry B.,
27, *Rue de l'Université, Paris.*

1883 De Keyser, Alderman Polydore,
Chatham House, Grove-road, Clapham Park, S.W.

Year of Election.	
1877	Deloitte, William Welch, 4, *Lothbury, E.C.*
1873	Dent, Clinton Thomas, F.R.C.S. 19, *Savile-row, W.*
1873	Dent, Edward, *Fernacres, Fulmer, near Slough, Bucks.*
1855	*Derby, The Right Hon. the Earl of, F.R.S., D.C.L., (*Honorary Vice-President*), *St. James's-square, S.W.; Knowsley, Prescot, Lancashire.*
1884	Dethridge, J. Frank, *The Hermitage, Ravenscourt-park, W.*
1877	Dever, Henry, 4, *Lothbury, E.C.*
1877	De Worms, Baron Henry, M.P., F.R.A.S., 4, *Old Burlington-street, W.*
1884	Dickson, Donald William, 39, *Lombard-street, E.C.*
1866	*Dilke, Sir Charles Wentworth, Bart., M.P., LL.M., 76, *Sloane-street, S.W.*
1881	Dillon, Malcolm, *Stradbroke Lodge, Putney, S.W.*
1873	Dixon, George, *The Dales, Edgbaston, Birmingham.*
1881	Dobell, Richard R., *Quebec, Canada.*
1875	Doxsey, Rev. Isaac, *The Grove, Camberwell, S.E.*
1878	Doyle, Patrick, C. E., F.G.S., M.R.A.S., *c/o* Rev. J. Doyle, *R. C. Cathedral, Black Town, Madras.*
1878	Duignan, William Henry, *Walsall, Staffordshire.*
1875	Dun, John, *Parr's Banking Company Limited, Warrington.*
1870	Duncan, James, 9, *Mincing-lane, E.C.*
1884	Dunn, Archibald Joseph, 6, *Westgate-terrace, South Kensington, S.W.*
1878	*Dunraven, The Right Hon. Earl of, K.P., *Kenry House, Putney Vale, S.W.*
1883	Edgeworth, Francis Ysidro, M.A., *Savile Club*, 107, *Piccadilly, W.*
1836	Edmonds, Thomas Rowe, B.A., 72, *Portsdown-road, Maida-vale, W.*
1869	Edmonds, William, *Annesley House, Southsea.*

Year of Election	
1880	Egerton of Tatton, The Right Honourable The Lord, 23, *Rutland Gate, S.W.*
1883	Eley, Charles, 201, *Mansion House Chambers, Queen Victoria-st., E.C.*
1872	Elliot, Sir George, Bart., M.P., *Park-street, Park-lane, W.*
1882	Elliott, Henry Thomas Worton, *Inland Revenue Office, Somerset House, W.C.*
1877	Ellis, Arthur, 42, *High-street, Highgate, N.*
1883	Ellis, Alderman Sir John Whitaker, Bart., M.P., 21, *Hertford-street, Mayfair, W.*
1873	Elsey, John Green, J.P., *Morant House, Addison-road Kensington, W.*
1873	Emanuel, Lewis, 36, *Finsbury-circus, E.C*
1877	Emmott, W. T., *Blackfriars-street, Manchester.*
1882	Essex, Benjamin Smily, 446, *Strand, W.C.*
1879	Evans, Henry Jones, J.P., *Brecon Old Bank, Cardiff.*
1875	Everett, The Hon. H. Sidney, M.A., *United States Legation*, 4, *Alsenstrasse, Berlin.*
1834	Eversley, The Right Hon. Viscount, D.C.L., LL.D., 114, *Eaton-square, S.W.; and Winchfield, Hants.*
1875	Faraday, Frederick J., 17, *Brazenose-street, Manchester.*
1874	Farmer, James, 6, *Porchester-gate, Hyde Park, W.*
1868	Farrell, John Douglas, *Bank of England, West Branch, Burlington-gardens, W.*
1878	Farren, George, J.P., A.M.Inst.C.E., *Carnarvon.*
1878	Farrer, Sir Thomas Henry, Bart., *Board of Trade, Whitehall Gardens, S.W.*
1876	Fearnside, Henry, M.B., F.R.C.P., *c/o Rev. F. F. Goe*, 1, *Montague-place, Russell-square, W.C.*
1882	Fell, Arthur, M.A., 46, *Queen Victoria-street, E.C.*
1864	Fellows, Frank Perks, 8, *The Green, Hampstead, N.W.*
1884	Felton, George Frederick, 6, *Church-walks, Llandudno, North Wales.*
1874	Ferguson, A.M., "*Ceylon Observer*" *Office, Colombo, Ceylon.*

Year of Election	
1880	Finch, George Henry, M.P., *Burley-on-the-hill, Oakham.*
1880	Findlay, George, *London and N. Western Railway, Euston Station, N.W.*
1884	Findlay, James Arbuckle, *The Brewery, Bishops Stortford, Herts.*
1880	Finlaison, Alexander John, F.I.A., 19, *Old Jewry, E.C.*
1884	* Finnemore, Robert Isaac, F.R.G.S., &c. *Durban, Natal, South Africa.*
1884	Fitzmaurice, Lord Edmond G., M.P., *Foreign Office, S.W.*
1882	Foley, Patrick James, *Pearl Ins. Co., Adelaide-place, London Bridge, E.C.*
1878	Follett, Charles John, M.A., B.C.L., *H.M. Custom House, E.C.*
1875	Fordham, Edward King, J.P., D.L. *The Bury, Ashwell, Baldock, Herts.*
1841	Fortescue, The Right Honourable Earl, *Castle Hill, South Molton, Devon.*
1884	Fosbery, William Thomas Exham. *The Castle-park, Warwick.*
1877	*Fowler, Alderman Robert Nicholas, M.P. *Elm Grove, Corsham, Wilts.*
1868	Fowler, William, M.P., 38, *Grosvenor-square, S.W.*
1878	Foxwell, Professor Herbert Somerton, M.A., *St. John's College, Cambridge.*
1879	Francis, George Edward, *Staunton Coleford, Gloucestershire.*
1882	Fraser, D. Manson, M.A., M.D., *c/o of D. Fraser, Esq., Invergordon, Ross, N.B.*
1883	Fraser, George J., 34, *Leadenhall-street, E.C.*
1844	*Freeland, Humphrey William, J.P., *Athenæum Club, S.W.; and Chichester.*
1876	Freeman, Joseph,
1884	Frith, Walter Halsted, 69, *Lombard-street, E.C.*
1878	Fuller, William Palmer, 50, *Gresham-street, E.C.*
1879	Fung, Yee, 49, *Portland-place, W.*
1879	Gairdner, Charles, *Broom, Newton Mearns, Renfrewshire.*

Year of Election.

1881 Gale, James Thomas,
10, *Kersley-street, Battersea-park, S.W.*

1852 Galsworthy, Edwin Henry, J.P., F.I.A.,
18, *Park-crescent, Portland-place, W.*

1873 *Galton, Capt. Douglas, R.E., C.B., LL.D., F.R.S.,
12, *Chester-street, Grosvenor-place, S.W.*

1860 Galton, Francis, F.R.S., F.R.G.S.,
42, *Rutland-gate, S.W.*

1881 Garnett, Frederick Brooksbank,
Board of Inland Revenue, Somerset House, W.C.

1881 Garraway, The Hon. David G.,
Castries, St. Lucia, West Indies.

1879 *Gassiot, John Peter, J.P.,
The Culvers, Carshalton, Surrey,

1872 Gastrell, Major-General J. E.,
Lansdowne-road, Bedford.

1883 Gates, Jacob S.,
9, *Fenchurch-avenue, E.C.*

1880 *Gates, John Benjamin, jun., A.C.A.,
47, *Warwick-street, Regent-street, W.*

1881 *Gatty, William Henry,
Market Harborough, Leicestershire.

1872 Gibb, Thomas Eccleston,
16, *Lady Margaret-road, N.W.*

1874 Gibbs, Alban George Henry,
82, *Portland-place, W.*

1871 Gibbs, George Sleight,
Derry Lodge, Darlington.

1882 Gibbs, Richard,
The Hollies, Weybridge.

1867 *Giffen, Robert, LL.D. (*Honorary Vice-President*),
44, *Pembroke-road, Kensington, W.*

1877 Gilbert, William H. Sainsbury,
9, *Old Jewry, E.C.*

1878 *Glanville, Silvanus Goring,
238, *Lewisham High-road, S.E.*

1860 Glover, John,
88, *Bishopsgate-street Within, E.C.*

1884 Glover, Thomas Rigbye,

1877 Goddard, Frederick Robertson,
19, *Victoria-square, Newcastle-on-Tyne.*

1884 Gonner, Edward C., B.A.,
57, *Finchley New-road, N.W.*

1877 Good, Alfred,
57, *Moorgate-st., E.C., Downe Lodge, Beckenham, Kent.*

1881 Goodrich, S. G.,
81, *Cheapside, E.C.*

1868 Göschen, The Right Hon. George Joachim, M.P.,
69, *Portland-place, W.*

Year of Election

1855 *Gosset, John Jackson,
Thames Ditton, Surrey.

1853 Gover, William Sutton, F.I.A.,
4, *Queen-street-place, Southwark Bridge, E.C.*

1876 Grahame, James, C.A.,
12, *St. Vincent-place, Glasgow.*

1879 Grant, Daniel, M.P.,
12, *Cleveland-gardens, Bayswater, W.*

1875 Granville, Joseph Mortimer, M.D., F.G.S., &c.,
18, *Welbeck-street, Cavendish-square, W.*

1847 Gray, Thomas,
34, *Fenchurch-street, E.C.*

1877 Greene, William Thomas, M.A., M.D.,
Moira House, Peckham Rye, S.E.

1881 Greening, William H.,
Oakfield Cottage, Balsall Heath, Birmingham

1883 Griffin. Josiah,
Vanburgh Park, Blackheath, S.E.

1868 Griffith, Edward Clifton,
1, *Waterloo-place, S.W.*

1884 Griffith, T. Risely,
Colonial Secretary, Sierra Leone.

1882 Griffiths, Ebenezer,
166, *St. John's-road, Hornsey Rise.*

1883 Grimshaw, Thomas Wrigley, M.D., M.A., &c.
(Registrar-General of Ireland),
Friorsland, Carrickmines, Co. Dublin.

1883 Gunther, Charles,
9, *Fenchurch-avenue, E.C.*

1875 Gunn, Arthur,
31, *Gloucester-road, Gloucester-gate, Regent's Park, N.W.*

1878 Guthrie, Charles,
London Chartered Bank of Australia, Melbourne, Victoria.

1839 Guy, William Augustus, M.B., F.R.C.P., F.R.S.,
(*Honorary Vice-President*),
12, *Gordon-street, Gordon-square, W.C.*

1880 *Gwynne, James Eglinton A., J.P., F.S.A.,
97, *Harley-st., W.; Folkington Manor, Polegate, Sussex.*

1884 Haas, Hendrik Christiaan,
60, *Mark lane, E.C.*

1884 Hadley, Joseph,
5, *Argyl-place, Regent-street, W.*

Year of Election.

1873 Hadrill, Henry John,
60, *Mark-lane, E.C.*

1884 *Haggard, Frederick T.,
The Grove, East Burnham, near Slough.

1876 Hague, John,
King-street, Toronto, Canada.

1869 Hall, Edward Hepple, F.R.A.S., &c.,
2, *Silwood-terrace, Brighton.*

1883 Hall, James Macalester,
Killean House, Tayinloan, Argyleshire.

1878 Hall, Sir John, K.C.M.G., *c/o Agent-General for New Zealand,*
7, *Westminster Chambers, Victoria-street, S.W.*

1873 Hallett, T.G.P., M.A.,
Claverton Lodge, Bath.

1883 Hamilton, The Right Hon. Lord George Francis, M.P.,
17, *Montagu-street, Portman-square, W.*

1882 Hamilton, James Thomas,
23, *High-street, Southampton.*

1882 Hamilton, John,
Junior Carlton Club, Pall Mall, S.W.

1879 Hamilton, John James,
The Grange, Chislehurst.

1884 Hamilton, Rowland,
Oriental Club, Hanover-square, W.

1855 *Hammersley, Hugh Greenwood,
6, *Chelsea Embankment, S.W.*

1873 Hampden, The Right Hon. Viscount, G.C.B.,
Glynde, Lewes, Sussex.

1869 Hanbury, Robert William,
Ilam Hall, Ashbourne, Derbyshire.

1879 Hancock, William,
35, *Cornhill, E.C.*

1875 Hancock, William Neilson, LL.D., Q.C., M.R.I.A.,
43, *Upper Gardiner-street, Dublin.*

1879 Hankey, Ernest Alers,
Elmhurst, Bickley-park, Kent.

1861 Hankey, Thomson,
59, *Portland-place, W.*

1876 Hannyngton, Major-General John Caulfield, F.I.A.,
India Office, Westminster, S.W.

1883 Hansard, Luke,
68, *Lombard-street, E.C.*

1871 Hansell, Robert B.,
Moor Oaks-road, Broomhill, Sheffield.

1877 *Harcourt, Right Hon. Sir William Vernon, Q.C., M.P., F.R.S.,
7, *Grafton-street, Bond-street, W.*

1883 Harding, Charles, M.R.S.L., F.R.G.S.,
10, *St. Swithin's lane, E.C.*

1883 Harding G. P.,
La Chaumiere, Trouville, France; and 5, *Austin Friars, E.C.*

Year of Election.	
1884	Hardy, George Francis, F.I A., 32, *Mildmay Chambers, Broad-street, E.C.*
1883	Hardy, William Henry, F.C.A., 5, *Great Winchester-street, E.C.*
1868	Harris, David, *Caroline Park, Granton, Edinburgh.*
1882	Harris, Frederick, 1, *Caroline-terrace, St. Ann's-road, Stamford-hill, N.*
1882	Harris, William James, M.P., 75, *Linden-gardens, Bayswater, W.*
1884	Hart, James, 19, *Fenchurch-street, E.C.*
1884	Hartel, Adolph, 46, *Springdale-road, N.*
1870	Hartley, Fountain John, *Gloucester House*, 97, *Cazenove-road, Upper Clapton, N.*
1881	Harvey, Alfred Spalding, B.A., 67, *Lombard-street, E.C.*
1884	Harvey, Thomas Morgan, 1, *Gresham Buildings, Basinghall-street, E.C.*
1880	Hastings, George Woodyatt, M.P., *Barnard's-green House, near Malvern.*
1876	Hawkins, Alfred Templeton, F.R.G.S., 22, *Budge-row, Cannon-street, E.C.*
1879	Hawksley, Thomas, C.E., F.R.S., &c., 30, *Great George-street, Westminster, S.W.*
1880	Hazell, Walter, *Ellerslie, Bromley, Kent.*
1884	Hedley, Robert Wilkin, 31*a*, *Colmore-row, Birmingham.*
1877	Hedley, Thomas Fenwick, 12, *Park-place West, Sunderland.*
1870	Hefford, George V., *Rugby.*
1883	Heilgers, Robert Phillip, 22, *Great St. Helens, E.C.*
1860	Helder, Stewart, F.I.A., 2, *Broad Sanctuary, S.W.*
1865	Hendriks, Augustus, F.I.A., 7, *Cornhill, E.C.*
1855	*Hendriks, Frederick, 1, *King William-street, E.C.*
1877	*Herbage, William, *London & South Western Bank*, 7, *Fenchurch-street, E.C.*
1884	Herbert, W. E., 69, *Buchanan-street, Glasgow.*
1881	Hewat, Archibald, F.I.A., F.F.A., 22, *George-street, Edinburgh.*
1883	Hewlings, Henry Freeman, 188, *Fleet-street, E.C.*

Year of Election.

1834 *Heywood, James, M.A., F.R.S., F.G.S.,
(*Honorary Vice-President and Trustee*),
26, *Palace-gardens, Kensington, W.; Athenæum Club, S.W.*

1869 Hickson, Joseph, J.P.,
Montreal, Canada.

1878 Hill, Frederick Morley,
22, *Richmond-road, Barnsbury, N.*

1859 Hincks, Hon. Sir Francis, K.C.M.G., C.B.,
Montreal, Canada.

1884 Hoare, Alfred,
37, *Fleet-street, E.C.*

1879 Hoare, Hamilton Noel,
37, *Fleet-street, E.C.*

1870 *Hoare, Henry,
5, *Lower Berkeley-street, W.*

1834 *Hodge, William Barwick, F.I.A.,
5, *Whitehall, S.W.*

1884 Hollond, John Robert, M.P.
1, *Upper Berkeley-street, Portman-square, W.*

1874 Hooper, Rev. George Downes,
"*Ellerslie*," *Sunny Gardens, Hendon, N.W.*

1879 Hooper, George Norgate,
Elmleigh, Hayne-road, Beckenham, Kent.

1878 Hooper, Wynnard,
2, *Pembroke-gardens, Kensington, W.*

1855 Houghton, The Right Hon. Lord, D.C.L., F.R.S.
(*Honorary Vice-President*),
Fryston Hall, Ferrybridge, Yorkshire.

1883 Howell, Francis Buller,
6, *Upper Wimpole-street, W.*

1883 Howell, George,
Hampden House, Ellingham-road, Shepherd's Bush, W.

1876 Hoyle, William,
Claremont, Tottington, near Bury, Lancaster.

1853 *Hubbard, The Right Hon. John Gellibrand, M.P.,
Bank of England, E.C.

1864 Hudson, Thomas,
4, *St. Ann's-road, Brixton, S.W.*

1878 Hughes, John,
3, *West-street, Finsbury-circus, E.C.*

1883 Hull, Edmund Charles Pendleton,
1, *Fenchurch-avenue, E.C.*

1872 Humphreys, George, M.A., F.I.A.,
79, *Pall Mall, S.W.*

1874 Humphreys, Noel Algernon,
General Register Office, Somerset House, W.C.

1873 Hunt, Sir Henry Arthur, C.B,
54, *Eccleston-square, S.W.*

1883 Hunt, Richard, A.. A.I.A.,
Moor-street, Birmingham.

Year of Election.

1857 Hurst, George,
King's Brook House, St. Mary's, Bedford.

1877 Huskinson, Thomas,
Epperstone Manor, Nottingham.

1879 Hyde, Major-General Henry, R.E.,
India Office, Westminster, S.W.

1866 Ince, Henry Bret, Q.C.,
20, *Old-square, Lincoln's-inn, W.C.*

1869 Ingall, Samuel, F.R.G.S.,
Kent-end, Forest-hill, Kent, S.E.

1874 *Ingall, William Thomas Fitzherbert Mackenzie,
50, *Threadneedle-street, E.C.*

1869 *Inglis, Cornelius, M.D.,
Athenæum Club, S.W.

1839 Irving, John,
94, *Eaton-place, S.W.*

1864 *Ivey, George Pearse,
Homleigh, Micheldever-road, Lee, S.E.

1880 *Jackson, William Lavies, M.P.,
Chapelallerton, Leeds.

1884 Jacoby, James Alfred,
Normanton Hall, Normanton-on-the-Wolds, Notts.

1879 Jamieson, George Auldjo,
37, *Drumsheugh-gardens, Edinburgh.*

1872 Janson, Frederick Halsey, F.L.S.,
41, *Finsbury-circus, E.C., and Oak Bank, Chislehurst.*

1878 Jeans, James Stephen,
Victoria Mansions, Victoria-street, Westminster, S.W.

1883 Jenkins, Benjamin,
3, *Fenchurch-avenue, E.C.*

1881 *Jersey, The Right Hon. the Earl of,
3, *Great Stanhope-street, W.*

1881 Johnson, Edwin Eltham,
110, *Cannon-street, E.C.*

1871 Johnson, Edmund,
1, *Castle street, Holborn, E.C.*

Year of Election	
1880	Johnson, Walter, *Rounton Grange, Northallerton*
1872	Johnston, Francis John, *Lamas, Chislehurst.*
1881	Johnston, Rev. James, *Gleneve, Highland-road, Upper Norwood, S.E.*
1883	Johnston, Thomas, *Broomsleigh Park, Seal, Sevenoaks.*
1878	Johnstone, Edward, 14, *Abbeville-road, Cavendish-road, Clapham, S.W.*
1884	*Jones, Edwin, J. P., 3, *Crooked-lane, King William-street, E.C.*
1878	Jones, Henry R. Bence, *Board of Trade, Whitehall-gardens, S.W.*
1874	Jones, Herbert, 15, *Montpelier-row, Blackheath, S.E.*
1882	Jones, John, 12, *King Edward-road, Hackney, E.*
1880	Jones, Robert Hesketh, *The Briars, Crystal Palace Park, Sydenham, S.E.*
1877	Jones, Theodore Brooke, *Georgeville, Harrogate, Yorks.*
1883	Joseph, Samuel Solomon, 29, *Hyde Park-gardens, W.*
1884	Josolyne, John Augustus, F.I.C.A., F.S.A., &c., 28, *King-street, Cheapside, E.C.*
1858	Jourdan, Francis, *Avenue House, Hampstead, N.W.*
1877	Karuth, Frank O., *City Liberal Club, Walbrook, E.C.*
1873	Kay, Duncan James, 60, *Queen's-gate, S.W.*
1877	Kealy, James William, 26, *Moorgate-street, E.C.*
1874	Kelly, Charles, M.D., *Worthing, Sussex.*
1884	Kelly, Edward Festus, 51, *Great Queen-street, Lincoln's-inn-Fields, W.C.*
1867	Kelly, Edward Robert, A.M., 51, *Great Queen-street, Lincoln's-inn-fields, W.C.*
1878	Kelsey, Joseph Francis, *Government Statistician, Mauritius.*
1883	Keltie, John Scott, 30, *Bedford-street, Covent Garden, W.C.*

Year of Election.	
1884	Kemp, John, 46, *Cannon-street, E.C.*
1873	Kemp, Samuel, *Oriel House, Bath.*
1884	*Kennedy, Charles Malcolm, C.B., *Foreign Office, S.W.*
1878	Kennedy, J. Murray, *New University Club, St. James's-street, S.W.*
1878	Kennedy, Thomas, 11, *Old Jewry-chambers, E.C.*
1883	*Keynes, John Neville, M.A., B.Sc. 6, *Harvey-road, Cambridge.*
1884	Kimber, Henry, 79, *Lombard-street, E.C.*
1852	Kimberley, The Right Honourable the Earl of, M.A., P.C., 35, *Lowndes-square, S.W.*
1883	*King, Bolton, B.A., 10, *Upper Berkeley-street, W.*
1878	King-Harman, Colonel Edward Robert, M.P., *Rockingham, Boyle, Ireland.*
1884	Kirby, Horace Woodburn, F.C.A., 4, *Coleman-street, E.C.*
1879	Kirkwood, Anderson, LL.D., *Melville-terrace, Stirling, N.B.*
1872	Knight, John Peake, *London, Brighton, & S. Coast Rail., London Bridge, E.C.*
1878	*Kusaka, Yoshio, *First National Bank, Tokio, Japan.*
1869	Kyshe, John Benjamin, *Registrar-General, Mauritius.*
1884	Laishley, Richard, jun., F.R.G.S., F.R.S.L., &c., *Auckland, New Zealand.*
1874	Lang, George Murray, R.N., 18, *Cheyne-walk, Chelsea, S.W.*
1881	Langton, Henry Currer, *Docklands, Ingatestone, Essex.*
1883	Last, William Harrison, *Inland Revenue, Somerset House, W.C.*
1877	Laurance, Henry, 39, *Old Bond-street, W.*
1874	Lawes, Sir John Bennett, Bart., LL.D., F.R.S., F.C.S., *Rothamsted-park, St. Albans.*
1878	Lawrence, Alexander Macclesfield, 99, *South Hill Park, Hampstead, N.W.*

Year of Election.	
1873	Lawrie, James, F.R.G.S., *Kelvin House, Quadrant-road, Highbury, N.*
1883	Lawson, Charles Henry, *Green's End, Woolwich.*
1873	Lawson, Robert (*Inspector-General of Army Hospitals*), 20, *Lansdowne-road, Notting-hill, W.*
1873	Lea, Thomas, M.P., 14, *Elvaston-place, Queen's-gate, S.W.*
1883	*Leadam, Isaac Saunders, M.A., 117, *St. George's-square, S W.*
1883	Lee, Henry, M.P., *Reform Club, S.W.*
1880	Lee, Lionel Frederic, (*Ceylon Civil Service*), *c/o H. Austin Lee, Foreign Office, Downing-street, S.W.*
1884	Lee, William, *Worplesden, Guildford, Surrey.*
1879	*Leete, Joseph, 36, *St. Mary-at-hill, E.C., & Eversden, S. Norwood Park.*
1883	Lefeaux, Alfred J., 12, *Clarendon Villas, Charlton, Kent.*
1877	Lefevre, The Right Hon. George Shaw, M.P., (*Honorary Vice-President*), 18, *Bryanston-square, W.*
1877	*Leggatt, Daniel, LL.D., 5, *Raymond-buildings, Gray's-inn, W.C.*
1880	Leighton, Stanley, M.P., *Sweeney Hall, Oswestry, Salop.*
1851	Levi, Professor Leone, LL.D., F.S.A., 5, *Crown Office-row, Temple, and* 31, *Highbury-grove, N.*
1867	Lewis, Charles Edward, M.P., 8, *Old Jewry, E.C.*
1877	Lewis, John, 7, *Waterloo-street, Birmingham.*
1862	Lewis, Robert, 1, *Bartholomew-lane, E.C.*
1877	Ligertwood, Thomas, M.D., F.R.C.S., *Royal Hospital, Chelsea, S.W.*
1884	*Lines, William Edward, 14, *Hugh-street, Eccleston-square, S.W.*
1845	*Lister, William,
1878	Lloyd, Thomas, 13, *Angel-court, Throgmorton-street, E.C.*
1879	Lloyd, Wilson, F.R.G.S., *Myvod House, Wood-green, Wednesbury.*
1882	*Longstaff, George Blundell, M.A., M.B., *Southfield Grange, West Hill-road, Wandsworth, S.W.*
1876	*Lornie, John Guthrie, J.P., *Rosemount, Kirkcaldy; (of Birnam and Pitcastle) N.B.*
1879	Lovegrove, Mrs., 28, *Park-street, Grosvenor-square, W.*

Year of Election.	
1834	Lovelace, The Right Honourable the Earl of, F.R.S., *East Horsley Park, Ripley, Surrey.*
1880	Lovely, William, R.N., 41, *Bernard-street, Russell-square, W.*
1879	Lowndes, William Layton, J.P., D.L., *United University Club, Pall Mall East, S.W.*
1875	Loyd, William Jones, J.P., *Langleybury, Watford.*
1865	Lubbock, Sir John, Bart., M.P., F.R.S., (*Trustee*), *High Elms, Farnborough, Kent.*
1882	Lubbock, Nevile, *Leesons, Chislehurst, Kent.*
1878	Lucas, Thomas, J.P., 37, *Great George-street, Westminster, S.W.*
1878	Lusk, Sir Andrew, Bart., M.P., J.P., 15, *Sussex-square, Hyde Park, W.*
1875	Mabson, Richard Rous, *Ilford, Essex.*
1873	*Macandrew, William, J.P., *Westwood, near Colchester.*
1873	McArthur, Alexander, M.P., *Raleigh Hall, Brixton, S.W.*
1873	McArthur, Alderman Sir William, K.C.M.G., M.P., 79, *Holland-park, W.*
1883	McCabe, Hugh B., 348, *Uxbridge-road, W., and* 45, *Friday-street, E.C.*
1884	McCabe, William, LL.B., F.I.A., *North America Life Assurance Company, Toronto, Canada.*
1879	MacCarthy, Rev. Egerton Francis Mead, M.A., 93, *Hagley-road, Edgbaston, Birmingham.*
1867	M'Clean, Frank, 23, *Great George-street, Westminster, S.W.*
1873	McDermott, Edward, *Hill Side, Grove-park, Camberwell, S.E.*
1881	Macdonald, Charles McCay, 17, *Queen Victoria-street, E.C.*
1872	Macdonell, John, 4, *Elm-court, Temple, E.C.*
1873	*McEwen, Laurence T., *c/o R. A. McLean*, 1, *Queen Victoria-street, E.C.*
1873	McGarel-Hogg, Colonel Sir James, Bart., M.P., 17, *Grosvenor-gardens, S.W.*
1882	McGuire, Patrick, 57, *Amherst-street, Calcutta.*

Year of Election.

1879 MacIver, David, M.P.,
34, *Lancaster-gate, W.*

1878 McKewan, William,
21, *Lombard-street, E.C.*

1881 Mackey, Rev. Canon Donald John, M.A., Cantab,
The Chantry, Balhousie, Perth, N.B.

1876 *McLean, Robert Allan, F.R.G.S.,
1, *Queen Victoria-street. E.C.*

1863 *Maclure, John William, J.P., &c.,
Carlton Club; The Home, Whalley Range, Manchester.

1875 Macpherson, Hugh Martin, F.R.C.S., (*Inspector-General*),
14, *St. James's-square, S.W.*

1883 Macqueen, Robert Davidson Barkly,
20, *Addison-gardens North, W.*

1882 McRosty, Alexander,
13, *King's Arms-yard, E.C.; West Bank, Esher.*

1884 Man, Edward Garnet,
Lamb Building, Temple, E.C.

1883 *Mandlik, The Hon. Rao Saheb Vishvanath Narayan, C.S.I.,
The Hermitage, Bombay.

1881 *Manson, Frederick William,
Wellfield, Muswell Hill, N.

1877 *Maple, John Blundell,
8, *Clarence-terrace, Regent's-park, N.W.*

1875 Marsh, Alfred,
85, *Gracechurch-street, E.C.*

1880 *Marshall Professor Alfred,
Firenze, Chesterton-road, Cambridge.

1873 Martin, Henry,
National Bank of India, 39*a*, *Threadneedle-street, E.C.*

1874 *Martin, John Biddulph, M.A., F.Z.S., (*Foreign Secretary*),
17, *Hyde-park-gate, S.W.*

1877 Martin, Josiah, F.I.A.,
32, *New Bridge-street, E.C.*

1872 *Martin, Richard Biddulph, M.P., (*Treasurer*),
68, *Lombard-street, E.C., and Chislehurst.*

1876 *Martin, Thomas Jaques,
84, *Collins-street West, Melbourne, Victoria.*

1879 Martin, Waldyve A. Hamilton,
The Upper Hall, Ledbury, Herefordshire.

1884 Mason, William Arthur,
31*a*, *Colmore-row, Birmingham.*

1875 *Mathers, John Shackleton,
Hanover House, Leeds, Yorkshire.

1883 Mathieson, Frederic Coxhead,
Beechworth, Hampstead, N.W.

1870 Maxse, Vice-Admiral Frederick A.,
16, *Queen's-gate-terrace, S.W.*

1874 May, Frank,
Bank of England, Threadneedle-street, E.C.

Year of Election.	
1882	Medhurst, John Thomas, 126, *Narrow-street, Limehouse, E.*
1883	*Medley, George Webb, *Oakwood, Camden, Chislehurst.*
1853	*Meikle, James, F.I.A., 6, *St. Andrew's-square, Edinburgh.*
1880	Menzies, R. Stewart, *Hallyburton, Coupar-Angus, N.B.*
1884	Merton, Zachary, 14*a*, *Manchester-square, W.*
1861	Messent, John, F.I.A., 429, *West Strand, W.C.*
1881	Meyer, Robert Alexander, 40A, *Queen's Mansions, Victoria-st., Westminster, S.W.*
1875	Mildmay, Henry Bingham, J P., 8, *Bishopsgate-street Within, E.C.*
1873	Millar, William Henry, *Cleveland Lodge, New Park-road, Brixton-hill, S.W.*
1877	Miller, Robert Ferguson, *Ramsden-square, Barrow-in-Furness.*
1879	Miller, William, 67, *Queen Victoria-street, E.C.*
1878	Mills, Sir Charles Henry, Bart., M.P., *Camelford House, Park-lane, W.*
1882	Milnes, Alfred, M.A., 30, *Almeric-road, Wandsworth, S.W.*
1884	Milnes, Charles S., 155, *Fenchurch-street, E.C.*
1874	*Mocatta, Frederick D., F.R.G.S., 9, *Connaught-place, W.*
1878	Moffat, Robert J., *Meadowcroft, Cambridge.*
1883	Moffatt, George, 6, *Lime-street, E.C., and* 29, *Eastbourne-terrace, W.*
1884	Mongredien, Augustus, 15, *Park-road-villas, Forest-hill, S.E.*
1879	Moore, Alfred, C.E., 5, *Clarence-street, Manchester.*
1874	Moore, Charles Rendall, 46, *Brockley-road, Lewisham-road, S.E.*
1877	Moore, Edward, 3, *Crosby-square, E.C.*
1883	Moore, Henry Jackson, 14, *Clarence-square, Cheltenham.*
1878	*Moore, John Byers Gunning, *Loymount, Cookstown, Ireland.*
1880	More, Robert Jasper, *Linley Hall, Bishopscastle, Salop.*
1883	Morgan, Henry James, *Ottawa, Canada.*

Year of Election.	
1883	Morgan, James Henry, 126, *Narrow-street, Limehouse, E.*
1872	Morgan, Octavius Vaughan, J.P., 13, *Boltons, South Kensington, S.W.*
1881	Morison, Arthur Duff, 23, *Regency-street, Westminster, S.W.*
1873	*Morley, Samuel, M.P., 18, *Wood-street, E.C.;* 34, *Grosvenor-street, W.*
1874	*Morris, James, M.D., F.R.C.S., 13, *Somers-place, Hyde-park-square, W.*
1884	Morris, W. Targett, *Langford House, Buckhurst-hill, Essex.*
1877	Mort, William, 1, *Stanley-crescent, Notting-hill, W.*
1873	Morton, James, 1, *Palmerston-buildings, Greenock, N.B.*
1847	*Mouat, Frederic John, M.D., F.R.C.S., 12, *Durham-villas, Kensington, W.*
1857	*Mount-Temple, The Right Hon. Lord, 15, *Great Stanhope-street, W.*
1878	Muir, Hugh Brown, 26, *Old Broad-street, E.C.*
1883	Muirhead, Henry James, *Oakwood, Farquhar-road, Upper Norwood, S.E.*
1880	Mulhall, Michael George, 19, *Albion-street, Hyde Park, W.*
1878	*Mundella, The Right Hon. Anthony John, M.P., F.R.S., 16, *Elvaston-place, Queens-gate, S.W.*
1878	Murray, Adam, 104, *King-street, Manchester.*
1879	Murray, James Charles, *Calcutta.*
1883	Murray, Kenric Bright, 84, *King William-street, E.C.*
1865	Nasmith, David, 4, *Garden-court, Temple, E.C.*
1878	*Nathan, Henry, 110, *Portsdown-road, Maida-vale, W.*
1879	Neil, William M., 64, *Seymour-street, Portman-square, W.*
1854	Neild, Alfred, *Mayfield Print Works, Manchester.*
1869	Neison, Francis Gustavus Paulus, 93, *Adelaide-road, South Hampstead, N.W.*

Year of Election	
1879	NEPEAN, EVAN COLVILLE, *War Office, Pall Mall, S.W.*
1877	Nevill, Charles Henry, 11, *Queen Victoria-street, E.C.*
1862	Newbatt, Benjamin, F.I.A., F.R.G.S., 13, *St. James's-square, S.W.*
1881	Newcome, Frederick N., *Haverstock Lodge, Watford, Herts.*
1879	Newdegate, Charles Newdigate, M.P., D.C.L., 27, *Lowndes-street, Belgrave-square, S.W.*
1883	Newmarch, Mrs. Elizabeth, *Brook House, Addlestone, Surrey.*
1878	Newport, Henry R., *Board of Trade, Whitehall-gardens, S.W.*
1878	Newton, John, *Ash Lea, Croydon-road, Penge, S.E*
1878	Nicholson, Professor J. S. *University of Edinburgh.*
1858	Nightingale, Miss Florence, 10, *South-street, Park-lane, W.*
1877	Nix, Samuel Dyer, F.C.A., 3, *King-street, Cheapside, E.C.*
1871	*Noble, Benjamin, *North-Eastern Bank, Newcastle-on-Tyne.*
1870	Noble, John, 62, *Lady Somerset-road, Highgate-road, N.W.*
1883	Norfolk, J. Ernest Walter, 95, *Farringdon-street, E.C.*
1884	Norman, Charles Loyd, *Oakley, Bromley, Kent.*
1877	Norman, General, Sir Henry Wylie, K.C.B., *King's House, Jamaica.*
1878	Northbrook, The Right Hon. the Earl of, G.C.S.I., D.C.L., 4, *Hamilton-place, Piccadilly, W.*
1878	Notthafft, Theodor, *c/o Discount Bank, St. Petersburg.*
1880	Oakeshott, George Alfred, *Secretary's Office, General Post Office, E.C.*
1884	Odgers, William Blake, LL.D., 4, *Elm-court, Temple, E.C.*
1880	*Oelsner, Isidor, *Highfield, Westwood-park, Forest-hill, S.E.*
1862	Ogbourne, Charles Henry, *Fairlawn, Bath-road, Reading.*

Year of Election

1884 Ogston, George Henry,
3, *St. James's-street, S.W.*

1878 O'Hagan, The Right Hon. Lord,
Hereford House, Park-street, Grosvenor-square, W.

1884 Oldroyd, Mark,
Hyrstlands, Dewsbury, Yorkshire.

1878 Oppenheim, Henry,
16, *Bruton-street, Bond-street, W.*

1876 Orange, William, M.D.,
Broadmoor, Wokingham, Berks.

1877 Ormond, Richard,
24, *Grainger-street West, Newcastle-on-Tyne.*

1874 Overall, William Henry, F.S.A.,
Librarian, Guildhall, E.C. (*Representing the Library Committee of the Corporation of the City of London.*)

1866 *Palgrave, Robert Harry Inglis, J.P., F.R.S.,
Belton, Great Yarmouth, Norfolk.

1883 Palmer, Charles,
Calcutta.

1879 Palmer, George, M.P.,
58, *Grosvenor-street, W.; and The Acacias, Reading.*

1884 Palmer, J. T.,
8, *Wine Office-court, Fleet-street, E.C.*

1878 Park, David Francis, C.A., F.F.A., A.I.A.,
17, *Change-alley, Cornhill, E.C.*

1880 Parkin, William,
The Mount, Sheffield.

1881 Parr, Samuel,
7, *Finsbury-square, E.C.*

1878 Parry, Thomas,
Grafton-place, Ashton-under-Lyne.

1879 Partridge, Henry Francis, L.D.S., &c.,
Sussex House, Sussex-place, South Kensington, S.W.

1883 Paterson, John,
35, *Walbrook, E.C.*

1869 Patterson, Robert Hogarth,
22, *Wingate-road, Hammersmith, W.*

1877 Paul, Henry Moncreiff,
12, *Lansdowne-crescent, Notting Hill, W.*

1878 Paulin, David,
31, *Stafford-street, Edinburgh.*

1879 Payn, Howard,
30, *Hyde-park-place, W.*

Year of Election.

1884 Payne, Frederick,
Newfarm, South-hill-park, Bromley, Kent.

1884 *Peace, Walter,
21, *Finsbury-circus, E.C.*

1876 Pearson, Edwin James,
Board of Trade, Whitehall Gardens, S.W.

1857 *Pearson, Professor C. H.,
c/o John Pearson, Esq., Q.C., 75, *Onslow-square, S.W.*

1880 *Pease, Sir Joseph Whitwell, Bart., M.P.,
24, *Kensington-palace-gardens, W.*

1884 Peek, Francis,
4, *Fenchurch-street, E.C.*

1876 *Peek, Sir Henry William, Bart., M.P.,
Wimbledon House, S.W.

1878 Pellereau, Hon. Etienne,
Procureur and Advocate-General, Port Louis, Mauritius.

1880 Pender, John, M.P.,
18, *Arlington-street, S.W., and* 66, *Old Broad-street, E.C.*

1871 Pennington, Frederick, M.P.,
17, *Hyde Park-terrace, W.*

1874 Pepys, The Hon. George,
47, *Sussex-gardens, W.*

1881 Perring, R. B.,
Queen's Chambers, John Dalton-street, Manchester.

1883 Petheram, Frederick William, F.C.A.,
2, *Lombard-court, E.C.*

1874 Phené, John Samuel, LL.D., F.S.A.,
5, *Carlton-terrace, Oakley-street, S.W.*

1879 Philips, Herbert,
35, *Church-street, Manchester.*

1877 Phillipps, Henry Matthews,
41, *Seething-lane, E.C.*

1859 Phillips, Henry James,
4, *Ludgate-hill, E.C.*

1883 Phillips, John Orwell,
Horseferry-road, Westminster, S.W.

1877 Phillips, John Walter, M.B., L.R.C.S. Edin.,
30, *Stanley-street, West Melbourne, Victoria, Australia.*

1878 Phipps, Pickering, M.P.,
6, *Collingtree Grange, Northampton.*

1871 *Pickering, John, F.R.G.S., F.S.A.,
Stoney Royd, Ilkley, Yorkshire.

1878 *Pim, Joseph Todhunter,
Greenbank, Monkstown, County Dublin.

1838 *Pinckard, George Henry, J.P., F.I.A.,
12, *Grove-road, St. John's-wood, N.W.*

1879 Pixley, Francis William,
5, *Upper Westbourne-terrace, Hyde Park, W.*

1881 Planck, Charles, M.R.C.S. (*Deputy Surgeon-General*),
Allahabad, India.

Year of Election.

1883 Platt, James,
Rookwood, Hampstead, N.W.

1861 Plowden, Wm. Chicele (*Census Commissioner for India*),
101, *Eaton-square, S.W.*

1869 Pochin, Henry Davis, J.P.,
Bodnant Hall, Eglwysbach, R.S.O. Denbighshire.

1884 Polson, John,
Paisley, N.B.

1883 Pope, William Agnew,
Merrington House, Bolton Gardens, South Kensington, W.

1879 *Powell, Francis Sharp, M.P. (*Horton Old Hall, Bradford*),
1, *Cambridge-square, Hyde Park, W.*

1871 Power, Edward,
16, *Southwell-gardens, South Kensington, S.W.*

1884 Power, John Danvers,
9, *New-inn, Strand, W.C.*

1883 Poynting, Professor J. H., M.A.,
Brentwood, Hagley-road, Edgbaston, Birmingham.

1877 *Prance, Reginald Heber,
Frognal, Hampstead, N.W.

1877 Praschkauer, Maximilian,
10, *Priory-grove, Boltons, S.W.*

1867 *Pratt, Robert Lindsay,
80, *Bondgate, Darlington*

1879 Price, James, F.R.G.S.,
53, *Redcliffe-gardens, South Kensington, W.*

1877 Price-Williams, Richard, C.E.,
38, *Parliament-street, S.W.*

1884 *Proctor, William,
89, *Corporation-street, Manchester.*

1871 Puleston, John Henry, M.P.,
2, *Bank-buildings, E.C.*

1837 *Purdy, Frederick,
35, *Victoria-road, Kensington, W.*

1879 Quail, Jesse,
14, *Palmerston-street, Stockton-on-Tees.*

1874 Quain, Richard, M.D., F.R.S., F.R.C.P.,
67, *Harley-street, W.*

1883 Quoadt, Ferdinand,
Corn Exchange Chambers, Seething-lane, E.C.

1883 Rabbidge, Richard, F.C.A.,
32, *Poultry, E.C.*

Year of Election.

1872 *Rabino, Joseph, (*c/o Crédit Lyonnais*),
Alexandria, Egypt.

1858 *Radstock, The Right Honourable Lord,
East Sheen, Mortlake, S.W.

1877 Raikes, Major George Alfred, F.S.A., F.R. His. Soc.,
63, *Belsize-park, Hampstead, N.W.*

1864 *Raleigh, Samuel,
9, *St. Andrew-square, Edinburgh.*

1883 *Ráma Varmá, His Highness, Bahadoor, G.C.S.I.,
Maharaja of Travancore,
The Palace, Trivandrum (Travancore), India.

1860 Ramsay, Alexander Gillespie, F.I.A.,
Canada Life Assurance Co., Hamilton, Canada West.

1879 Ranken, William Bayne,

1880 Rankin, James, M.P.,
35, *Ennismore-gardens, Prince's Gate, S.W.*

1881 Raper, Robert George,
Chichester.

1884 Raphael, Alfred,
87, *Alexandra-road, N.W.*

1865 Ratcliff, Colonel Charles, J.P.,
26, *Lancaster-gate, Hyde Park, W.*

1859 Rathbone, P. H.,
Greenbank Cottage, Liverpool.

1878 Rathbone, William, M.P.,
18, *Prince's-gardens, Prince's-gate, S.W.*

1884 *Ravenscroft, Francis,
Birkbeck Bank, Chancery-lane, W.C.

1874 *Ravenstein, Ernest George, F.R.G.S.,
29, *Lambert-road, Brixton Rise, S.W.*

1877 *Rawlins, Thomas,
45, *King William-street, E.C.*

1835 Rawson, Sir Rawson W., K.C.M.G., C.B. (*President*),
68, *Cornwall-gardens, Queen's-gate, S.W.*

1880 Readdy, George,
13, *Harrington-street, Liverpool.*

1875 Record, John,
23, *Kenninghall-road, Clapton, E.*

1879 Rhodes, John George,
Oakdene, Beckenham, Kent.

1884 Richards, E. W., C.E.
Middlesboro-on-Tees.

1884 Richardson, T. H.,
Brynteg, Middlesbrough.

1873 Ripon, The Most Hon. the Marquess of, K.G., F.R.S, &c.,
1, *Carlton-gardens, S.W.*

1882 Roberts, Edward, F.R.A.S., (*Nautical Almanac Office*),
3, *Verulam-buildings, Gray's Inn, W.C.*

Year of Election.

1868 Robinson, Sir William Rose, K.C.S.I.,
50, *Norfolk-square, Hyde-park, W.*

1880 *Ronald, Byron L.,
14, *Upper Phillimore-gardens, W.*

1880 Ronald, Robert Bruce,

1883 Roscoe, Henry William Kent,
69, *Cadogan-place, S.W.*

1873 *Rosebery, The Right Hon. the Earl of,
Lansdowne House, Berkeley-square, W.

1834 *Ross, David, of Bladensburg,
Rostrevor, Co. Down, Ireland.

1883 Ross, John Grafton,
Oriental Club, Hanover-square, W.

1880 Roth, Henry Ling,
48, *Wimpole-street, W.*

1865 Ruck, George Thomas,
The Hawthorns, Dorville-road, Lee, S.E.

1879 Runtz, John,
Linton Lodge, Lordship-road, Stoke Newington, N.

1878 Russell, Richard F.,
8, *John-street, Adelphi, W.C.*

1884 Ryan, Gerald H., F.I.A.
14, *Leadenhall-street, E.C.*

1873 *Salisbury, The Most Hon. the Marquess of, P.C., F.R.S.,
20, *Arlington-street, W.*

1881 Salmon, James,
Melford Lodge, Wanstead, Essex.

1875 *Salomons, Sir David Lionel, Bart., J.P.,
Broom-hill, Tunbridge Wells.

1876 Salt, Thomas, M.P.,
Weeping Cross, Stafford.

1868 Samuelson, Sir Bernhard, Bart., M.P.,
56, *Prince's-gate, Hyde-park, S.W.*

1860 Sargant, William Lucas,
Rotton-park-road, Birmingham.

1877 Saunders, Charles Edward, M.D.,
21, *Lower Seymour-street, Portman-square, W.*

1874 Saunders, Francis,
6, *Limes-grove, Lewisham, S.E*

1852 Saunders, James Ebenezer, jun., F.G.S.,
9, *Finsbury-circus, E.C.*

Year of Election.	
1879	Saunders, William, *Mount View, Streatham, S.W.*
1883	Schidrowitz, Samuel, 102, *Oxford-gardens, Notting Hill, W.*
1877	Schiff, Charles, 22, *Lowndes-square, S.W.*
1877	Schneidau, Charles John, 6, *Westwick-gardens, West Kensington-park, W.*
1883	Schwann, John Frederick, *Oakfield, Wimbledon, and* 6, *Moorgate-street, E.C.*
1883	Sclanders, Alexander, 10, *Austin Friars, E.C.*
1878	Scott, Arthur J., 22, *Grafton-street, New Bond-street, W.*
1880	*Seeley, Charles, jun., M.P., *Sherwood Lodge, Nottingham.*
1883	Seligman, Isaac, *Lincoln House, Clapham Park, S.W.*
1873	Seyd, Richard, 38, *Lombard-street, E.C.*
1841	Shaftesbury, The Right Hon. the Earl of, K.G., (*Honorary Vice-President*), 24, *Grosvenor-square, W.*
1879	Shepheard, Wallwyn Poyer Burnett, M.A., 24, *Old Buildings, Lincoln's Inn, W.C.*
1871	Sidgwick, Henry, *Trinity College, Cambridge.*
1878	Simmonds, G. H., 1, *Whitehall, S.W.*
1850	Singer, Charles Douglas, 53, *The Common, Upper Clapton, E.*
1882	Skinner, C. Weeding, *Hill Crest, Theydon Bois, Essex.*
1884	Skliros, George Eustace, M.A., F.R.G.S., &c., 82, *Mortimer-street, Cavendish-square, W.*
1881	Skrine, Francis Henry, *United Service Club, Calcutta, India.*
1883	Sly, Richard Stevens, 6, *Cornwall-street, E.*
1869	Smee, Alfred Hutcheson, M.R.C.S., *The Grange, Wallington, Surrey.*
1878	*Smith, Charles, M.R.I.A., F.G.S., Assoc. Inst. C.E., *Barrow-in-Furness.*
1883	*Smith, The Hon. Donald A., 1157, *Dorchester-street, Montreal, Canada.*
1874	Smith, Edward, *St. Mildred's House, Poultry, E.C.*
1871	Smith, E. Cozens, 1, *Old Broad-street, E.C.*

Year of Election.

1883 Smith, E. Woodley, A.C.A.,
28, *Budge-row, Cannon-street, E.C.*

1878 *Smith, George, LL.D., C.I.E.,
Serampore House, Napier-road, Edinburgh.

1877 Smith, Howard S.,
37, *Bennett's Hill, Birmingham.*

1878 *Smith, James,
South Indian Railway, Negapatam, Madras.

1877 Smith, John,
8, *Old Jewry, E.C.*

1879 Smith, J. Fisher,
76, *Cheapside, E.C.*

1883 Smith, Samuel, M.P.,
West Hill Side, Clapham Common, S.W.

1880 Smith, Thomas Sherwood,
Firgrove, Keynsham, near Bristol.

1867 *Smith, The Right Honourable William Henry, M.P.,
3, *Grosvenor-place, S.W.*

1884 Solomon, The Hon. Michael, (*Jamaica*),
c/o Joseph Bravo and Co., 48, *St. Mary Axe, E.C.*

1855 Sowray, John Russell,
Office of Woods, 2, *Whitehall-place, S.W.*

1877 Spalding, Samuel,
South Darenth, Kent.

1884 Spark, C. W.,
The Chantry, Alford, Lincolnshire.

1867 *Spencer, Robert James,
High-street, Portsmouth.

1876 Spensley, The Hon. Howard, F.R.G.S.,
12, *Earl's Court-square, South Kensington, S.W.*

1881 Spice, Robert Paulson, C.E.,
21, *Parliament-street, Westminster, S.W.*

1883 Spicer, Albert,
Woodford, Essex. and 50, *Upper Thames-street, E.C.*

1856 *Sprague, Thomas Bond, M.A., F.I.A.,
26, *St. Andrew-square, Edinburgh.*

1872 Spriggs, Joseph,
Dale Cottage, Foxton, near Market Harbro'.

1882 Stack, Thos. Neville,
5, *D'Olier-street, Dublin.*

1856 *Stainton, Henry Tibbats,
Mountsfield, Lewisham, S.E.

1881 Stancliffe, Frederick,
42, *St. John-street, Montreal, Canada.*

1877 Stanford, Edward,
13 *and* 14, *Long Acre, W.C.*

1877 Staples, Sir Nathaniel Alexander, Bart.,
Lissan, Cookstown, Tyrone, Ireland.

1880 Stark, James,
17, *King's Arms-yard, E.C.*

Year of Election	
1880	Stephens, William Davies, J.P., 4, *Abbotsford-terrace, Newcastle-on-Tyne.*
1882	*Stern, Edward De, 11, *Princes-gate, S.W.*
1883	Stone, Frank, 71, *Bishopsgate-street, E.C.*
1877	Stone, William Alfred, 90, *Cannon-street, E.C.; West Hill Lodge, Dartford, Kent.*
1855	*Stott, John, F.I.A., 7, *Buckland-crescent, Belsize-park, N.W.*
1865	Strachan, Thomas Young, F.I.A., 18, *Grainger-street West, Newcastle-on-Tyne.*
1872	Strachey, General Richard, R.E., C.S.I., F.R.S., *India Office, Westminster, S.W.*
1880	Strutt, Hon. Frederick, *Milford House, near Derby.*
1884	*Sugden, Richard, *The Farre Close, Brighouse, Yorkshire.*
1880	*Summers, William, M.P. (*Sunnyside, Ashton-under-Lyne*), *Reform Club, Pall Mall, S.W.*
1884	Sutherland, Thomas, M.P., 167, *Cromwell-road, South Kensington, S.W.*
1884	Sweeting, Richard Deane Roker, M.R.C.S., B.A., &c., *Western District Hospital, Seagrave-road, Fulham, S.W.*
1884	Sykes, D. F. E., LL.B., 33, *Market-street, Huddersfield.*
1881	Sykes, George Samuel, 1, *Grant's Lane, Calcutta, India.*
1859	*Tait, Patrick Macnaghten, F.R.G.S., *Oriental Club, Hanover-square, W.*
1884	Tarbet, Thomas William, 33, *Warwick-street, Regent-street, W.*
1880	Taylor, George, 17, *Abchurch-lane, E.C.*
1883	Taylor, Harry, 7, *Albemarle-street, W.; and* 9, *Aldermanbury, E.*
1877	Taylor, John Edward, 12, *Queen's Gate-gardens, South Kensington, S.W.*
1884	Tempany, Thomas William, F.R.H.S., 10, *Bedford-row, W.C.*
1882	Temperley, Joseph, 1, *Cail's-buildings, Newcastle-on-Tyne.*
1880	Temple, Sir Richard, Bart., G.C.S.I., D.C.L., LL.D., &c., *Carlton Club, Pall Mall, S.W.*

Year of Election.	
1879	Thomas, William Angell, *King's College, Strand, W.C.*
1879	Thomas, W. Cave, 53, *Welbeck-street, Cavendish-square, W.*
1878	Thompson, Alfred Boyle, F.R.C.P. Edin., 18, *Serjeants'-inn, Temple, E.C.*
1878	Thompson, Captain C. Halford (late R.A.), *Claremont, Exeter.*
1864	*Thompson, Henry Yates, 26*a*, *Bryanston-square, W.*
1868	Thomson, James, 35, *Nicholas-lane, E.C.*
1871	Thomson, Thomas D., 57, *Moorgate-street, E.C.*
1883	Thorburn, Alexander Brown, 17, *Marloes-road, Kensington, W.*
1882	Tinker, James, 80, *Cromwell-road, S.W.*
1879	Tipping, William, *Oakfield House, Ashton-under-Lyne.*
1855	Tomline, Colonel George, 1, *Carlton House-terrace, S.W.*
1868	*Treatt, Frank Burford, *Immigration Office, Sydney, New South Wales.*
1868	Tritton, Joseph Herbert, 54, *Lombard-street, E.C.*
1883	Trouson, Norman Percy Mills, *Hope Park, Bromley, Kent.*
1880	Tupp, Alfred Cotterill (*Bengal Civil Service*), 6, *Harrington-street, Calcutta.*
1878	Turnbull, Alexander, 118, *Belsize-park-gardens, N.W.*
1884	Turner, Francis, 5, *Pump-court, Temple, E.C.*
1867	Turner, Thomas, *Holywell House, Weston-super-Mare.*
1878	Turton, William Woolley, *The Cottage, Croxted-road, West Dulwich, S.E.*
1841	Tyndall, William Henry, 92, *Cheapside, E.C.*
1873	Underdown, Robert George, *London-road Railway Station, Manchester.*
1876	*Urlin, Richard Denny, 22, *Stafford-terrace, Phillimore-gardens, W.*

Year of Election.	
1842	Valpy, Richard, 5, *Rutland-gate, S.W.*
1868	Vanderbyl, Philip, 51, *Porchester-terrace, W., & Northwood, Winchester.*
1880	Van de Linde, Gérard, F.C.A., 12, *Laurence Pountney-lane, Cannon-street, E.C.*
1883	Van Essen, Jacob, 56, *Threadneedle-street, E.C.*
1884	Veevers, Richard, *Woningworth, Fulwood-park, Preston.*
1874	Vian, William John, 64, *Cornhill, E.C.*
1876	Vigers, Robert, 4, *Frederick's-place, Old Jewry, E.C.*
1877	Vine, John Richard Somers, 27, *Great Winchester-street, E.C.*
1873	Vivian, Major Quintus, D.L., F.R.G.S., 17, *Chesham-street, S.W.*
1877	Waddy, Henry Edward, L.R.C.P., M.R.C.S., 2, *Clarence-street, Gloucester.*
1883	Wahab, Edward, 14, *St. Mary Axe, E.C.*
1873	Wakeford, Henry, *Home Office, Whitehall, S.W.*
1857	*Walford, Cornelius, F.I.A., 86, *Belsize-park-gardens, N.W.*
1883	Walford, John Edward, C.C., *Knightrider-street, E.C.*
1871	*Walker, R. Bailey, *Ribblesdale Cottage, Wellington-road, Fallowfield.*
1882	Wallen, Robert, J.P., *Harlech, Hawthorn, near Melbourne, Victoria.*
1868	Wallis, Charles James, 93, *Brecknock-road, Camden-road, N.*
1880	Wallis, E. White, F.M.S., 1, *Springfield-road, St. John's Wood, N.W.*
1876	Walter, Arthur Fraser, 15, *Queen's Gate-terrace, S.W.*
1850	Walter, John, M.P., 40, *Upper Grosvenor-street, W.*
1879	Wansey, Arthur H., *Sambourne, Stoke Bishop, Bristol.*
1873	Waring, Charles, 2, *Grosvenor-square, S.W.*

Year of Election.	
1865	Waterhouse, Edwin, B.A., 44, *Gresham-street, E.C.*
1873	Watson, John Forbes, M.A., M.D., LL.D. 16, *Lullington-road, Anerley, S.E.*
1883	Watson, T. Wilkinson, 151, *West George-street, Glasgow.*
1882	Watson, Walter, 52, *Balmes-road, Southgate-road, N.*
1883	Watson, William Livingstone, 7, *Wetherby-gardens, South Kensington, S.W.*
1865	Webster, Alphonsus, 44, *Mecklenburg-square, W.C.*
1873	Webster, James Hume, 14, *Chapel-street, Park-lane, W.*
1873	Weguelin, Thomas Matthias, *Woodbridge, Guildford,*
1873	*Welby, Sir Reginald Earle, K.C.B., *The Treasury, Whitehall, S.W.*
1855	Weldon, James Walton, 1, *St. James's-square, S.W.*
1873	Wells, W. Lewis, 66, *Old Broad-street, E.C.*
1855	Welton, Thomas Abercrombie, *Rectory Grove House, Clapham, S.W.*
1879	Wenley, James Adams, *Bank of Scotland, Bank-street, Edinburgh*
1876	Westgarth, William, 8, *Finch-lane, E.C.*
1879	*Westlake, John, Q.C., LL.D., *The River House*, 3, *Chelsea Embankment, S.W.*
1882	*Whadcoat, J. H., *Halifax, Yorkshire.*
1883	*Whadcoat, William Edward, *Crown Buildings, Old Broad-street, E.C.*
1878	Wharton, James, 10, *Buckland-crescent, Belsize-park, N.W*
1884	Whibley, Frederick George, *Albion Chambers, Bristol.*
1859	Whitbread, Samuel, M.P., 10, *Ennismore-gardens, Princes-gate, S.W.*
1876	Whitcher, John, Jr., F.I.A., 81, *King William-street, E.C.*
1863	White, Leedham, 44, *Onslow-gardens, S.W.*
1871	White, William, 70, *Lombard-street, E.C.*
1878	Whiteford, William, 3, *Temple-gardens, E.C.*
1873	Whitehead, Jeffery, 39, *Throgmorton-street, E.C.*

Year of Election	
1884	Whiteley, William, *Westbourne-grove, Bayswater, W.*
1879	*Whitwill, Mark, J.P., *Redland House, Durdham-park, Bristol.*
1884	Wightman, Charles, 151, *Fenchurch-street, E.C.*
1878	Wilcox, William, L.R.C.P. (Edin.), M.R.C.S., 1, *Oakley-square, Regent's-park, N.W.*
1875	Wilkinson, Thomas Read, *Manchester and Salford Bank, Manchester.*
1860	Willans, John Wrigley, *Beech Holme, Burley, Leeds.*
1879	Williams, Edward, *Cleveland Lodge, Middlesborough.*
1864	Williams, Frederick Bessant, 2, *Ludgate Hill, E.C.*
1881	Williams, Henry Maunder, 58, *Acre-lane, Brixton, S.W.*
1870	Williams, Henry Reader, 6, *Lime-street, E.C.; and Oak Lodge, Highgate, N.*
1876	Williams, John Worthey, 5, *Marlborough-road, Upper Holloway, N.*
1884	Wilson, James, *Balliol College, Oxford.*
1874	*Wilson, Robert Porter, 5, *Cumberland-terrace, Regent's-park, N.W.*
1872	*Winch, William R., *North Mymms Park, Hatfield, Herts.*
1884	Wishart, G. D., 8, *Livingstone-avenue, Sefton-park, Liverpool.*
1868	Wood, H. W. I. (*Calcutta*), *c/o Messrs. Richardson*, 13, *Pall Mall, S.W.*
1883	Wood, Thomas Percival, 27, *Leadenhall-street, E.C., and* 127, *Peckham Rye, S.E.*
1877	Woodrow, Thomas John, *Sisland Cottage, Wanstead.*
1873	Woods, Henry, *Warnford Park, Bishop's Waltham, Hants.*
1838	Woolhouse, Wesley Stoker Barker, F.R.A.S., *Alwyne Lodge, Alwyne-road, Canonbury, N.*
1878	Worsfold, Rev. John Napper, M.A., *Haddlesey Rectory, near Selby, Yorkshire.*
1880	Wren, Walter, 7, *Powis-square, W.*
1883	Wright, Bryce McMurdo, *Hesket House*, 54, *Guilford-street, Russell-square, W.C.*
1838	*Wyatt-Edgell, Rev. Edgell, 40, *Lower Grosvenor-street, W.; Stanford Hall, Rugby.*
1884	Wyllie, Colin Campbell, 34, *Clement-lane, E C., and Walden, Chislehurst.*

Year of Election.	
1872	Yeatman, Morgan, *Shawfield, Bromley, Kent.*
1879	Yeats, John, LL.D., 7, *Beaufort-square, Chepstow.*
1877	*Youll, John Gibson, *Jesmond-road, Newcastle-on-Tyne.*
1882	Young, E. M., 123, *Bishopsgate-street Within, E.C.*

*** *The Executive Committee request that any inaccuracy in the foregoing list may be pointed out to the* ASSISTANT SECRETARY *and that all changes of address may be notified to him, so that delay in forwarding communications and the publications of the Society may be avoided.*

HONORARY MEMBERS.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.,

Honorary President.

EUROPE.

Austria and Hungary.

Year of Election.		
1874.	**Budapest**.....	M. CHARLES KELETI, Conseiller ministériel ; Chef du Bureau royal hongrois de Statistique. Docteur en droit ; Chevalier de l'ordre autrichien de Léopold ; Commandeur de l'ordre russe de St. Stanislaus et de l'ordre portugais de la Villa Viçosa.
1877.	**Vienna**.....	DR. HUGH FRANCIS BRACHELLI, Aulic Councillor, Chief of the Statistical Department, Ministry of Commerce ; Professor at the Technical High School in Vienna ; President of the Permanent Commission for Commercial Values. Commander of the Russian Orders of St. Anna and St. Stanislaus, of the Luxembourg Order of the Oak-Crown ; Officer of the Order of the Italian Crown ; Knight of the Order of the House of Saxe-Ernestine ; Officer of Public Instruction of France, &c., &c.
1854.	,, ...	S. E. M. CHARLES BARON DE CZOERNIG, Conseiller intime actuel de S. Majesté Imp. et Royale ; Ancien Président de la Commission Centrale Imp. et Royale de Statistique à Vienne.
1879.	,, ...	PROFESSOR FR. XAVIER von NEUMANN-SPALLART, D.C.L., Professor of Political Economy and Statistics, Agricultural College, University of Vienna ; Aulic Councillor ; Member of the Imperial Statistical Commission ; Honorary Member of the Statististical Society of Paris, and of the Cobden Club, London.
1877.	,, ...	M. MAX WIRTH, Ancien Chef du Bureau fédéral de Statistique en Suisse.

Belgium.

1879.	**Brussels**	M. le DR. EUGÈNE JANSSENS, Docteur en médecine, &c. ; Inspecteur en chef du Service d'Hygiène de la Ville de Bruxelles. Membre de l'Académie royale de médecine, de la Commission centrale de Statistique, du Conseil Supérieur d'Hygiène, de la Commission médicale locale ; Membre Sécrétaire de la Commission locale de Statistique, &c. ; Chevalier de l'ordre de Léopold et de l'ordre de St. Maurice et de St. Lazare, &c.

Denmark.

Year of Election.		
1878.	**Copenhagen** ..	PROFESSOR VIGAND ANDREAS FALBE-HANSEN, Professor of the University of Copenhagen; Member of the "Folkething."
1852.	„ ..	DR. PETER ANTON SCHLEISNER, Officer of Health of the City of Copenhagen; Member of the Royal General Board of Health for Denmark, Doctor of Medicine, Conseiller d'État; Knight of the Order of Dannebroge, and the Swedish Order of "Nordstjerne"; Corresponding Member of the Medical Society in Stockholm and Christiania, of the "Société de Médecine publique et d'Hygiène professionelle" in Paris, of the "Société d'Hygiène publique de Bordeaux, and of the "Société royale de Médecine publique de Belgique," &c.

France.

1880.	**Paris**.....	M. le DR. JACQUES BERTILLON, Docteur en médecine; Chef des Travaux statistiques de la Ville de Paris: Directeur des "Annales de Démographie internationale;" Professeur suppléant à l'Ecole d'anthropologie.
1856.	„	M. MAURICE BLOCK, Membre de l'Institut de France (Académie des Sciences morales et politiques); Chevalier de la Légion d'honneur et des ordres de Suède, Russie, Prusse, Bavière, Autriche-Hongrie, Grèce, Italie, Espagne, Portugal.
1879.	„	M. le DR. ARTHUR CHERVIN, Directeur de l'Institution des Bègues de Paris; Docteur en médecine et en chirurgie; Membre de la Commission permanente de Statistique de la Ville de Paris; Fondateur des "Annales de Démographie internationale," &c.
1878.	„	M. MAXIMIN DELOCHE, Membre de l'Institut de France; Directeur honoraire de la Statistique Générale de France; Commandeur de la Légion d'honneur; Officier de l'Instruction publique; Commandeur de l'ordre Imp. et Royale de François Joseph d'Autriche-Hongrie; Membre de diverses Sociétés savantes.
1870.	„	M. CLÉMENT JUGLAR, President Sortant de la Société de Statistique de Paris.
1854.	„	M. ALFRED LEGOYT, Ancien Directeur de la Statistique Générale.
1860.	„	M. PIERRE ÉMILE LEVASSEUR, Membre de l'Institut de France; Professeur au Collége de France et au Conservatoire des arts et métiers.
1860.	„	M. MARIE LOUIS PIERRE FELIX ESQUIROU DE PARIEU, Sénateur; Membre de l'Institut de France; Grand croix de la Légion d'honneur, et de plusieurs ordres étrangers.

Year of Election.		
1876.	**Paris**	M. LE PRÉSIDENT DE LA SOCIÉTÉ DE STATISTIQUE DE PARIS.
1880.	„	L'HONORABLE M. JEAN BAPTISTE LÉON SAY, Sénateur; Membre de l'Institut de France.

Germany.

1860.	**Bavaria**	DR. GEORGE KARL LEOPOLD SEUFFERT, Chief Inspector and Director of the Royal Custom House at Simbach; Knight of the Order of St. Michael.
1878.	**Berlin**	DR. CHARLES BECKER, Director des Kaiserlichen Statistischen Amts; Geheimer Ober-Regierungsrath.
1854.	„	DR. ERNEST ENGEL, formerly Director of the Royal Statistical Bureau of Prussia.
1876.	**Frankfort**	THE PRESIDENT OF THE STATISTICAL SOCIETY OF FRANKFORT.
1877.	**Strasburgh**....	DR. GEORGE MAYR, Under Secretary of State in the Imperial Ministry for Alsace-Lorraine; formerly Director of the Royal Bureau of Statistics.
1871.	**Stuttgart**.....	SIR HENRY PAGE-TURNER BARRON, Bart. British Minister.

Great Britain and Ireland.

1876.	**Dublin**.....	THE PRESIDENT OF THE STATISTICAL AND SOCIAL INQUIRY SOCIETY OF IRELAND.
1876.	**Manchester** ..	THE PRESIDENT OF THE MANCHESTER STATISTICAL SOCIETY.

Greece.

1870.	**Athens**.....	M. A. MANSOLAS, Chef de Division, Directeur du Bureau de Statistique Hellénique.

Italy.

1879.	**Genoa**	SIGNOR GEROLAMO BOCCARDO, Senatore del Regno; Professore di Economia nella Regia; Scuola Superiore Navale, e di Statistica nella R. Università di Genova; Commendatore dei S.S. Maurizio e Lazzaro; Grande Ufficiale della Corona d'Italia; Cavaliere del Merito Civile di Savoja, &c.
1880.	**Padua**	DR. EMILIO MORPURGO, Deputato al Parlamento; Professore ordinario di statistica nella regia Università di Padova; membro del consiglio superiore di statistica; Membro effettivo del regio Istituto Veneto Socco corrispondente della reale Accademia dei Lincei; Gr. uff. dell'Ordine del a Corona d'Italia; Comm. dell'Ordine dei S.S. Maurizio e Lazzaro; Gr. cord. dell'Ordine di Fr. Guiseppe.

Year of Election.		
1880.	**Pavia**	DR. LUIGI COSSA, LL.D., Professor of Political Economy at the University of Pavia; Honorary Member of the Cobden Club.
1874.	**Rome**	SIGNOR LUIGI BODIO, Direttore generale della Statistica del Regno; Professore.
1865.	,, ...	REV. CESARE CONTINI, Priest and Beneficiato Vaticano; Member of the Statistical Society of Pavia; of the Hygienic Society of Italy; and of the Hygienic Society of Paris.
1877.	,, ...	S. E. CESARE CORRENTI, Deputato al Parlamento; Vice-Presidente della Giunta Centrale di Statistica; già Ministro della Pubblica Istruzione.
1880.	,, ...	DR. ANGELO MESSEDAGLIA, Deputato al Parlamento; Professore Ordinario di Università; Commendatore.
1868.	,, ...	IL MARCHESE ERMENEGILDO DEI CINQUE QUINTILI, Avvocato, Segretario Generale della Commissione degl'Ospedali di Roma.
1854.	**Turin**.....	SIGNOR GIOVANNI FLECHIA, Professore di Storia comparata delle lingue classiche e neolatine, e di sanscrito nell'Università di Torino; Commendatore; della R. Accademia delle Scienze di Torino e di quella dei Lincei; dell'ordine del Merito Civile di Savoja.
1845.	**Venice**.....	SIGNOR FRANCESCO FERRARA, Professore e Direttore della Scuola Superiore di Commercio a Venezia; già Deputato al Parlamento; già Ministro delle Finanze.

Portugal.

1854.	**Lisbon**.....	M. A. J. D'AVILA, Ministre d'État honoraire, Conseiller d'Etat, et Député des Cortès.

Russia.

1873.	**St. Petersburg**	HIS EXCELLENCY M. PETER SEMENOFF (SEMENOW), Senator, Conseiller privé de S.M.I. President of the Statistical Council; President of the Imperial Geographical Society; Honorary Member of the Academy of Sciences in St. Petersburg.
1858.	,,	M. le DR. J.B. VERNADSKI, Conseiller d'Etat actuel, ex-Professeur.
1877.	,,	M. A. VESSÉLOVSKY, Sécrétaire du Comité Scientifique du Ministère Impérial des Finances.

Spain.

1845.	**Madrid**.....	EXMO SEÑOR D. JOSÉ MAGÁZ Y JAYME, Lawyer, and Member of the Council of State; Grand Cross of Isabella Catolica; Commander of the Order of Carlos 3º; Ex-Deputy of the Cortes; Ex-Senator; Ex-Director-General of Treasury; Ex-Under-Secretary of the Ministry of Finance &c.

Sweden and Norway.

Year of Election.		
1858.	**Christiania**....	PROFESSOR THORKIL HALVORSEN ASCHEHOUG, Professor at the University of Christiania; Professor of Law and Political Economy at the University of Christiania; Chairman of the Board of Directors of the Royal Norwegian Hypottukbank; Member of the Institute of International Law, and of the Academies of Christiania, Trondhjem and Upsala, and of the Royal Historical Society of Denmark; Commander of the Norwegian Order of St. Olave; of the Swedish Order of the North Star; and Commander of the First Class of the Order of Danebrog.
1874.	„ ..	M. A. N. KIÆR, Director of the Statistical Bureau of Norway.
1860.	„	THOMAS MICHELL, Esq., C.B., H.B.M. Consul-General in Norway.
1860.	**Stockholm**....	M. FREDRIK THEODOR BERG, Ancien Directeur du Bureau Royal de Statistique de la Suède; Docteur en médecine; Dr. honoraire en philosophie et en jurisprudence; Membre de l'Académie Royale des Sciences à Stockholm, et de l'Académie Royale de l'Agriculture; Membre correspondant de la Commission centrale de Statistique à Bruxelles, de la Société de Statistique à Paris; Membre des Sociétés des médecins à Stockholm, Christiania, Copeghanue et Helsingfors, &c.; Commandeur des Ordres Royales de l'Étoile polaire et de Wasa, &c.

Switzerland.

1840.	**Geneva**.....	M. MALLET.

Turkey.

1877.	**Constantinople.**	HIS HIGHNESS AHMED VÉFYK PACHA, Sénateur, &c.

AMERICA.

Dominion of Canada.

1876.	**Ottawa**.....	JOHN LANGTON, Esq., M.A., late Auditor-General.

United States.

1873.	**Albany, N.Y.** ..	THE HON. WILLIAM BARNES, Councillor-at-Law; Ex-Superintendent of the Insurance Department, State of New York.
1860.	**Dorchester, Mass.**	DR. EDWARD JARVIS, A.M., late President of the American Statistical Association, Boston.

Year of Election.

1876. **New Haven, Conn.** FRANCIS A. WALKER, Esq., Ph.D., LL.D., President of the Massachusetts Institute of Technology; Member of the National Academy of Sciences; President of the American Statistical Society.

1870. **Norwich, Conn.** THE HON. DAVID A. WELLS, D.C.L., LL.D., Late Special Commissioner of Revenue of the United States; Chairman of Commission for the Revision of Taxes of the State of New York; President of the American Social Science Association; Member of the Board of Arbitration of American Railways; Corresponding Member of the Institute of France; President of the American Free Trade League; Chairman 1883 of the Department of Finance of the American Social Science Association.

1870. **Taunton, Mass.** THE HON. JOHN ELIOT SANFORD, Lawyer; Speaker of the House of Representatives; Insurance Commissioner; Chairman of the Board of Harbour and Land Commissioners.

1880. **Washington ..** THE HON. CHARLES F. CONANT, late Assistant Secretary of the Treasury of the United States.

1881. ,, JOHN S. BILLINGS, Esq., M.D., Surgeon United States Army; Member of the National Academy of Science, &c.

1877. ,, EDWARD YOUNG, Esq., A.M., Ph.D., formerly Chief of the Bureau of Statistics, United States of America.

AUSTRALASIA.

New South Wales.

1876. **Sydney**..... EDWARD GRANT WARD, Esq., Registrar-General, and a Magistrate of the Colony of New South Wales.

New Zealand.

1876. **Wellington**.... JAMES HECTOR, Esq., M.D., C.M.G., F.R.S., L. and E., F.G.S., &c. Director of the Geological Survey, of the Meteorological Department, and of the New Zealand Institute.

Queensland.

1877. **Brisbane**..... HENRY JORDAN, Esq., Registrar General.

South Australia.

1869. **Adelaide**..... JOSIAH BOOTHBY Esq., C.M.G., Under Secretary and Government Statist of South Australia.

Tasmania.

Year of Election.		
1876.	**Hobart**	EDWIN CRADOCK NOWELL, Esq., J.P., Clerk of Executive and Legislative Councils, and late Government Statistician.

Victoria.

1875.	**Melbourne**	HENRY HEYLYN HAYTER, Esq., C.M.G., Government Statist of Victoria. Officier de l'Instruction Publique (France) ; Honorary Member of the Statistical and Social Inquiry Society of Ireland, of the Statistical Association of Tokio, and of the Royal Society of Tasmania ; Honorary Corresponding Member of the Statistical Society of Manchester, of the Geographical Society of Bremen, and of the Royal Society of South Australia ; Fellow and Honorary Corresponding Secretary for Victoria of the Royal Colonial Institute.
1858.	,, ...	WILLIAM HENRY ARCHER, Esq., K.S.G., F.I.A., F.L.S., &c., Barrister-at-Law.

Note.—The Executive Committee request that any inaccuracies in the foregoing List of Honorary Members may be pointed out, and that all changes of address may be notified to the Secretary, so that delay in forwarding communications and the publications of the Society may be avoided.

INDEX TO RULES.

RULE

1. The Objects of the Society.
2. Society to consist of Fellows and Honorary Members.
3. No. of Fellows unlimited; Hon. Members not to exceed 70.
4. Fellows—Candidates to be proposed by two or more Fellows.
5. Do. to be elected by Ballot.
6. Do. on Admission may attach F.S.S. to their Names.
7. Honorary Members, Proposed by Council; Elected by Ballot.
8. Fellows, to pay an Annual Subscription or a Composition.
9. Do. how disqualified. Written notice of withdrawal required.
10. Do. and Honorary Members, Expulsion of.
11. Trustees. Property of Society, to be vested in Three.
12. President, Council, and Officers, Number and Particulars of.
13. } Do. do. do. Election and Qualifications of.
14. }
15. Do. do. do. Extraordinary Vacancies of.
16. Committees, may be appointed by Council.
17. Meetings, Ordinary and Anniversary, when to be held.
18. Ordinary Meetings, Business of. Strangers may be introduced.
19. Anniversary Meetings, Business of.
20. Special General Meetings may be called.
21. Auditors, Appointment and Duties of.
22. President, Duties of. To have a Casting Vote.
23. Treasurer, Duties of, subject to the Council.
24. Secretaries, Duties of.
25. Vice-Presidents, Powers of.
26. Council, Duties of, in Publishing Papers and Expending Funds.
27 } Do. Powers of, to frame Regulations not inconsistent
28. } with these Rules.
29. Do. to publish a Journal of the Transactions of the Society.
30. Right of Property reserved in all Communications received.

RULES OF THE STATISTICAL SOCIETY.

Objects of the Society.

1. The Statistical Society was established to collect, arrange, digest, and publish facts illustrating the condition and prospects of society, in its material, social and moral relations. These facts are for the most part arranged in tabular forms, and in accordance with the principles of the numerical method.

The Society not only collects new materials, but condenses, arranges, and publishes those already existing, whether unpublished or published in diffuse and expensive forms, in the English or in any foreign language.

The Society likewise promotes the discussion of legislative and other public measures from the statistical point of view. These discussions form portions of the Transactions of the Society.

Constitution of the Society.

2. The Society consists of Fellows and Honorary Members, elected in the manner laid down in the following rules.

Number of Fellows and Honorary Members.

3. The number of Fellows shall be unlimited. Foreigners or British subjects of distinction residing abroad may be admitted as Honorary Members: of whom the number shall not be more than seventy at any one time.

Proposal of Fellows.

4. Every Candidate for admission as a Fellow of the Society, shall be proposed by two or more Fellows, who, shall certify from their personal knowledge of him or of his works, that he is a fit person to be admitted a Fellow of the Statistical Society. Every such certificate having been read and approved at a Meeting of the Council, shall be suspended in the meeting-room of the Society until the following Ordinary Meeting, at which the vote shall be taken upon it.

Election of Fellows.

5. In the election of Fellows, the votes shall be taken by ballot. No person shall be admitted unless at least sixteen Fellows vote, and unless he have in his favour three-fourths of the Fellows voting.

Admission of Fellows.

6. Every Fellow elect shall appear for his admission on or before the third Ordinary Meeting of the Society after his election, or within such time as shall be granted by the Council.

The manner of admission shall be thus:—

Immediately after the reading of the minutes, the Fellow elect, having first paid his subscription for the current year or his composition, shall sign the obligation contained in the Fellowship-book, to the effect following:—

"We, who have underwritten our "names, do hereby undertake, each for "himself, that we will endeavour to "further the good of the Statistical "Society for improving Statistical "Knowledge, and the ends for which "the same has been founded; that "we will be present at the Meet-"ings of the Society as often as con-"veniently we can, and that we will "keep and fulfil the Rules and Orders "of this Society: provided that when-"soever any one of us shall make known, "by writing under his hand, to the "President for the time being, that he "desires to withdraw from the Society, "he shall be free thenceforward from "this obligation."

Whereon the President, taking him by the hand, shall say,—"*By the autho-"rity and in the name of the Statis-"tical Society I do admit you a "Fellow thereof.*"

Upon their admission Fellows shall have the right of attaching to their names the letters F.S.S.

Admission of Honorary Members.

7. There shall be Two Meetings in the year, on such days as shall be hereafter fixed by the Council, at which *Honorary Members* may be elected.

No Honorary Member can be recommended for election but by the Council. Any Member of the Council may propose a Foreigner or British subject of distinction residing abroad at any Meeting of the Council, delivering at the same time a written statement of the qualifications, offices held by, and published works of the person proposed; and ten days' notice at least shall be given to every Member of the Council, of the day on which the Council will vote by ballot on the question whether they will recommend the person proposed. No such recommendation to the Society shall be adopted unless at least three-fourths of the votes are in favour thereof.

Notice of the recommendation shall be given from the chair at the Meeting of the Society next preceding that at which the vote shall be taken thereon. No person shall be elected an Honorary Member unless sixteen Fellows vote and three-fourths of the Fellows voting be in his favour.

The Council shall have power to elect as Honorary Members, the Presidents for the time being of the Statistical Societies of Dublin, Manchester, and Paris, and the President of any other Statistical Society at home or abroad.

Payments by Fellows.

8. Every Fellow of the Society shall pay a yearly subscription of *Two Guineas*, or may at any time compound for his future yearly payments by paying at once the sum of Twenty Guineas.*

Defaulters.— Withdrawal of Fellows.

9. All yearly payments are due in advance on the 1st of January, and if any Fellow of the Society have not paid his subscription before the 1st of July, he shall be applied to in writing by the Secretaries, and if the same be not paid before the 1st of January of the second year, a written application shall again be made by the Secretaries, and the Fellow in arrear shall cease to receive the Society's publications, and shall not be entitled to any of the privileges of the Society until such arrears are paid; and if the subscription be not discharged before the 1st of February of the second year, the name of the Fellow thus in arrear shall be exhibited as a defaulter on a card suspended in the meeting-rooms; and if, at the next Anniversary Meeting, the amount still remain unpaid, the defaulter shall be announced to be no longer a Fellow of the Society, the reason for the same being at the same time assigned. No Fellow of the Society can withdraw his name from the Society's books, unless all arrears be paid; and no resignation will be deemed valid unless a written notice thereof be communicated to the Secretaries. No Fellow shall be entitled to vote at any Meeting of the Society until he shall have paid his subscription for the current year.

Expulsion of Fellows.

10. If any Fellow of the Society, or any Honorary Member, shall so demean himself that it would be for the dishonour of the Society that he longer continue to be a Fellow or Member thereof, the Council shall take the matter into consideration; and if the majority of the Members of the Council present at some Meeting (of which and of the matter in hand such Fellow or Member, and every Member of the Council, shall have due notice) shall decide by ballot to recommend that such Fellow or Member be expelled from the Society, the President shall at the next Ordinary Meeting announce to the Society the recommendation of the Council, and at the following Meeting the question shall be decided by ballot, and if at least three-fourths of the number voting are in favour of the expulsion, the President shall forthwith cancel the name in the Fellowship-book, and shall say,—

"By the authority and in the name "of the Statistical Society, I do declare "that A. B. (naming him) is no longer "a Fellow (or Honorary Member) "thereof."

* Cheques should be made payable to "The Statistical Society," and crossed "Messrs. Drummond and Co."

And such Fellow or Honorary Member, shall thereupon cease to be of the Society.

Trustees.

11. The property of the Society shall be vested in *three Trustees*, chosen by the Fellows. The Trustees are eligible to any other offices in the Society.

President, Council, and Officers.

12. The Council shall, besides the Honorary Vice-Presidents and the Trustees, consist of thirty-one Members, of whom one shall be the President, and four be nominated Vice-Presidents. The Council shall be elected as hereafter provided. Any five of the Council shall be a quorum. From the Council shall be chosen a *Treasurer, three Secretaries*, and a *Foreign Secretary*, who may be one of the Secretaries. Six Fellows, at least, who were not of the Council of the previous year, shall be annually elected.

Election of President and Officers.

13. The President shall be chosen yearly by the Fellows. The same person shall not be eligible more than two years in succession.

The former Presidents who are continuing Fellows of the Society shall be Honorary Vice-Presidents; four Vice-Presidents shall be yearly chosen from the Council by the President.

Any Honorary Vice-President may take part in the deliberations of the Council on expressing a wish to that effect: and when attending the Meetings of the Council, shall exercise all the rights and powers of a Member of the Council.

The Treasurer and Secretaries shall be chosen yearly by the Fellows from the Council.

Election of Council.

14. The Council shall, previously to the Anniversary Meeting, nominate, by ballot, the *Fellows whom they recommend* to be the next President and Council of the Society. They shall also recommend for election a Treasurer and Secretaries (in accordance with Rule 12). Notice shall be sent to every Fellow whose residence is known to be within the limits of the metropolitan post, at least a fortnight before the Anniversary Meeting, of the names of Fellows recommended by the Council.

Extraordinary Vacancies.

15. On any *extraordinary vacancy* of the Office of the President, or other Officer of the Society, or in the Council, the Secretaries shall summon the Council with as little delay as possible, and a majority of the Council, thereupon meeting in their usual place, shall, by ballot, and by a majority of those present, choose a new President, or other Officer of the Society, or Member of the Council, to be so until the next Anniversary Meeting.

Committees.

16. The Council shall have power to appoint *Committees of Fellows* and also an Executive Committee of their own body. The Committees shall report their proceedings to the Council. No report shall be communicated to the Society which is not approved by the Council.

Meetings Ordinary and Anniversary.

17. The *Ordinary Meetings* of the Society shall be monthly, or oftener, during the Session, which shall be from the 1st of November to the 1st of July, both inclusive, on such days and at such hours as the Council shall declare. The *Anniversary Meeting* shall be held on such day in June of each year as shall be appointed by the Council for the time being.

Business of Ordinary Meetings.

18. The business of the *Ordinary Meetings* shall be to admit Fellows, to read and hear reports, letters, and papers on subjects interesting to the Society. Nothing relating to the rules or management of the Society shall be discussed at the Ordinary Meetings, except that the *Auditors' Report* shall be received at the Ordinary Meeting in *February*, and that the Minutes of the Anniversary Meeting, and of every Special General Meeting, shall be confirmed at the next Ordinary Meeting after the day of such Anniversary or Special General Meeting. *Strangers* may be introduced to the Ordinary

Meetings, by any Fellow, with the leave of the President, Vice-President, or other Fellow presiding at the Meeting.

Business of Anniversary Meeting.

19. The business of the *Anniversary Meeting* shall be to elect the Officers of the Society, and to discuss questions on its rules and management. No Fellows or Honorary Members shall be proposed or admitted at the Anniversary Meeting. No Fellow shall moot any question on the rules or management of the Society at the Anniversary Meeting, unless after *three weeks' notice* thereof given to the Council, but amendments to any motion may be brought forward without notice, so that they relate to the same subject of motion. The Council shall give fourteen days' notice to every Fellow of all questions of which such notice shall have been given to them.

Special General Meetings.

20. The Council may, at any time, call a *Special General Meeting* of the Society when it appears to them necessary. Any ten Fellows may require a Special General Meeting to be called, by notice in writing signed by them, delivered to one of the Secretaries at an Ordinary Meeting, specifying the questions to be moved. The Council shall, within one week of such notice, appoint a day for such Special General Meeting, and shall give one week's notice of every Special General Meeting, and of the questions to be moved, to every Fellow within the limits of the metropolitan post, whose residence is known. No business shall be brought forward at any Special General Meeting other than that specified in the notice for the same.

Auditors.

21. At the *first Ordinary Meeting* of each year, the Fellows shall choose two *Auditors*, not of the Council, who, with one of the Council, chosen by the Council, shall audit the Treasurer's accounts, and report thereon to the Society, which report shall be presented at the Ordinary Meeting in February. The Auditors shall be empowered to examine into the particulars of all expenditure of the funds of the Society where they shall see occasion, and may report their opinion upon any part of it.

Duties of the President.

22. The *President* shall preside at all Meetings of the Society, Council, and Committees, which he shall attend, and in case of an equality of votes, shall have a second or casting vote. He shall sign all diplomas of admission of Honorary Members. He shall admit and expel Fellows and Honorary Members, according to the rules of the Society.

Duties of the Treasurer.

23. The *Treasurer* shall receive all moneys due to, and pay all moneys due from, the Society, and shall keep an account of his receipts and payments. No sum exceeding Ten Pounds shall be paid but by order of the Council, excepting always any lawful demand for rates or taxes. He shall invest the moneys of the Society in such manner as the Council shall from time to time direct.

Duties of the Secretaries.

24. The *Secretaries* shall, under the control of the Council, conduct the correspondence of the Society; they or one of them shall attend all Meetings of the Society and Council, and shall have the care of duly recording the Minutes of the Proceedings. They shall issue the requisite notices, and read such papers to the Society as the Council may direct.

Powers of the Vice-Presidents.

25. A *Vice-President*, whether Honorary or nominated, in the chair, shall act with the power of the President, in presiding and voting at any Meeting of the Society or Council, and in admitting Fellows; but no Vice-President shall be empowered to sign diplomas of admission of Honorary Members, or to expel Fellows. In the absence of the President and Vice-Presidents, any Fellow of the Society may be called upon, by the Fellows then present, to preside at an Ordinary Meeting. The Fellow so presiding may admit Fellows, but shall not be empowered to act otherwise as President, or Vice-President.

Powers of the Council.

26. The Council shall have control over the papers and funds of the Society, and may, as they shall see fit, direct the publication of papers and the expenditure of the funds, so, that they shall not at any time contract engagements on the part of the Society beyond the amount of the balance that would be at that time in the Treasurer's hands, if all pre-existing debts and liabilities had been satisfied.

27. The Council shall be empowered at any time to frame *Regulations* not inconsistent with these rules, which shall be, and remain in force until the next Anniversary Meeting at which they shall be either affirmed or annulled; but no Council shall have power to renew Regulations which have once been disapproved at an Anniversary Meeting.

28. No Dividend, Gift, Division, of Bonus in money shall be made by the Society, unto or between any of the Fellows or Members, except as hereinafter provided.

29. The Council shall publish a Journal of the Transactions of the Society, and such other Statistical Publications, as they may determine upon, and may from time to time pay such sums to Editors and their assistants, whether Fellows of the Society or not, as may be deemed advisable.

30. All communications to the Society are the property of the Society, unless the Council allow the right of property to be specially reserved by the Contributors.

REGULATIONS OF THE LIBRARY.

1. The Library is open daily from 10 a.m. till 5 p.m., except on Saturdays, when it closes at 2 p.m.; and it is entirely closed during the month of September.

2. Members of the Society are permitted to take out Books on making personal application, or by letter addressed to the Librarian.

3. Members are not to have more than two works at a time, nor keep any books longer than a month.

4. Scientific Journals and Periodicals are not circulated until the volumes are completed and bound.

5. Cyclopædias and works of reference are not circulated.

6. Any Member damaging a book, either replaces the work, or pays a fine equivalent to its value.

7. Books taken from the shelves for reference, are *not* to be replaced, but must be laid on the Library table.

8. The Secretary shall report to the Council any infringement of these regulations.

DONORS TO THE LIBRARY.

DURING THE YEAR 1884.

Foreign Countries.

Argentine Republic.
Austria and Hungary
Belgium.
Bulgaria.
China.
Denmark.
Egypt.
France.
Germany.
Prussia.
Bavaria.
Saxony.
Guatemala.
Italy.
Netherlands.
Portugal.
Roumania.
Russia.
Spain.
Sweden and Norway.
Switzerland.
United States.
Uruguay.

The States of—

California.
Massachusetts
Michigan.
Minnesota.
New York.
Rhode Island.
Wisconsin.

Indian, Colonial, and other Possessions.

Bengal.
Canada. Dominion of.
Cape of Good Hope.
Hong Kong.
India (British).
Jamaica.
Mauritius.
New South Wales.
New Zealand.
Queensland.
Sierra Leone.
South Australia.
Tasmania.
Victoria.

Public Departments.

The Admiralty.
„ Agricultural Department.
„ Army Medical Department.
„ Board of Trade.
„ Convict Prisons, Directors of.
„ Crown Agents for the Colonies.
„ Customs.
„ Factories, Inspectors of.
„ Fire Brigade, Metropolitan.
„ Friendly Societies, Registrar of.
„ Home Office.
The India Office.
„ Local Government Board.
„ Mint, The Royal.
„ Naval Medical Department.
„ Police, London Metropolitan.
„ Registrar-General of England.
„ „ „ Ireland.
„ „ „ Scotland.
„ Warden of Standards.
„ Woods, Forests, &c.

Abdur-Rahman Syud.
Actuaries, The Institute of.
Adelaide, Philosophical Society of.
Agriculture, Central Chamber of.
Allen, Messrs. W. H., and Co., London.
American Academy of Arts and Sciences, Boston.
American—
Academy of Natural Sciences, Philadelphia.
Geographical Society of N. York.
Philosophical Soc. of Philadelphia.
Amici, F. Bey, Cairo, Egypt.
Argentine Legation, London.
Arts, Society of.

During the Year 1884—*Continued.*

Asiatic Society of Bengal.
„ „ Japan.
Association of Chambers of Commerce of the United Kingdom.
Astor Library, New York U. S. A.
Athenæum, The Editor of.
Austrian Statistical Commission.

Babbage, Major-General H. P.
Bailey, James B., Esq.
Bailey, W. F., Esq.
Baker, Dr. H. B., Lansing, U.S.A.
Bankers' Institute, London.
„ Magazine, London.
„ „ New York.
Bastable, C. F., Esq.
Beggs, T., Esq.
Behm, G., Esq.
Belgium, Academy, Royal.
Bell, I. Lowthian, Esq.
Bellamy, John, Esq.
Berg, Dr. F. T., Stockholm.
Berlin, Statistical Bureau of.
Bernard, H. F., Esq.
Bernard, W. Leigh, Esq.
Beyts, H. N. D., Esq.
Bodio, Professor Luigi, Rome.
Boileau, Surg.-Major J. P. H., M.D.
Bourdillon, J. A., Esq.
Bourinot, J. G., Esq., Ottawa.
Bourne, Stephen, Esq.
Boutcher, Mortimer, & Co., Messrs.
Bouteron, E., Esq., Cairo.
Brachelli, Dr. H. F., Vienna.
Briggs, Thomas, Esq.
British Association, The.
„ Trade Journal, The Editor of.
„ Iron Trade Association.
Brussels, The Bureau of Hygiene.
„ The Burgomaster.
Budapest, Statistical Bureau.
Buenos Ayres, Statistical Bureau of.
Building Societies, &c., Gazette.
Bulgaria, The Statistical Bureau.
Burchard, H. C., Esq., Washington.

Caillard, A., Esq., Alexandria.
California, The State Mineralogist.
Camácho, D. Juan Francisco, Esq.
Canada, Royal Society of.
Canadian Institute, The.
Cape of Good Hope, The Colonial Secretary.
„ The Education Office.
Carter, J. R., Esq., London.
Cater, Sons, and Co., Messrs. W. J.
Cauderlier, Em., Esq.
Chailley, Joseph, Esq.
Chalmers, Patrick, Esq.
Civil Engineers, Institution of.
Cobden Club, the Committee of.
Commercial World, The Editor of.
Coni, Dr. E. R., Buenos Ayres.
Contini, D. Cesare, Rome.
Craigie, Major P. G., London.
Cunliffe-Owen, E., Esq.

Danvers, F. C., Esq.
Danvers, Juland, Esq., London.
Day, S., Esq.
De Jouy, Henry B., Esq.
Denmark Political Economy Soc.
Doyle, Patrick, Esq.
Dublin, Chief Com. of Police.
Du Cane, Sir Edmund F., K.C.B.
Durant and Co., Messrs.

Eason, Charles, Esq., jun.
East India Association, London.
Eaton and Sons, Messrs. H. W.
Economist, The Editor of.
Economiste Français, The Editor of.
Edinburgh, The City Chamberlain.
„ Royal Society of.
Egypt, Director-Genl. of Customs.
„ Administration of the Daira Sanieh.
Elliott, H. T. W., Esq.
Ellison and Co., Messrs., Liverpool.

Fairlamb, W., Esq., York.

During the Year 1884—*Continued.*

Finance Chronicle, The Editor of.
Finlaison, A. J., Esq.
Flax Supply Association, Belfast.
Foville, M. A. de, Paris.
France, The Bureau of Longitude.
„ Permanent League for the Protection of the Interests of Ratepayers, &c.
Frankfort-on-Maine—
Geographical and Statistical Soc.
Medical Society.
The Statistical Bureau of.
Frankland, F. W., Esq.
Franklin Institute, Philadelphia.
Fraser and Co., Messrs.
Freemantle, Hon. C. W., C.B.
Frisby, Alfred, Esq.

Galton, Francis, Esq., F.R.S.
Garnett, F. B., Esq.
Germany, Imperial Statistical Office.
German Railways, Administration of.
Glasgow, The Mitchell Library.
„ Philosophical Society of.
Greathead, J. H., Esq., C.E.
Griffith, T. R., Esq.
Guatemala, The Government of.
Guy, Dr. W. A., F.R.S., &c.

Haggard, Frederick T., Esq.
Hague, G., Esq., Montreal.
Halton, W. F., Esq., Cairo.
Hamburg, Bureau of Trade Statistics.
„ Chamber of Commerce.
„ Statistical Bureau of.
Hamilton, John, Esq.
Hamonet, Alfred, Esq.
Harrison and Sons, Messrs., London.
Hart, Sir Robt., K.C.M.G., Shanghai.
Haviland, A., Esq.
Hayter, H. H., Esq., C.M.G., Melbourne.
Hector, Dr. James, C.M.G., Wellington.
Hill, Dr. A.
Historic Society of Lanc. & Cheshire.
Howard Association, London.
Howell, George, Esq.
Hungary, Statistical Bureau of.

India, The Government of.
Ingall, G. D., Esq.
Insurance Gazette, The Editor of.
„ Post, The Editor of.
„ Record, The Editor of.
Investors' Monthly Manual, The.
Iron and Coal Trades' Review, The.
Iron and Steel Institute.
Italy, Director General of Statistics.
„ Ministry of Public Works.

Jamaica, The Registrar-General.
Janssens, Dr. E., Brussels.
Jarvis, Dr. E., U.S.A.
Jeans, J. S., Esq.
Jenkins, F. L., Esq., U.S.A.
John, Dr. V., Vienna.
Johnston, Rev. J., Upper Norwood.
Johnston, R. M., Esq., Tasmania.

Kelly, Charles, Esq., M.D., F.R.C.P.
Kennedy, C. M., Esq., C.B.
King's College, London.
Knox, John Jay, Esq., Washington.
Kőrösi, Joseph, Esq., Budapest.
Kyshe, J. B., Esq., Mauritius.

Labourers' Friend, The Editor of.
Labouring Classes, Society for Improving the Condition of the.
Leipzig, Statistical Bureau of.
Le Mesurier, H. P., Esq., Cairo.
Liberty and Property Defence League, The.
Lisbon, Geographical Society of.
Littledale, Ragg, and Co., Messrs.
Liverpool, Lit. and Phil. Society.
Local Taxation Committee.
London Chamber of Commerce.
London Hospital, The Secretary.

During the Year 1884—*Continued.*

Lord's Day Observance Society.
Loring, Geo. B., Esq., U.S.A.

McCarthy, Rev. E. F. M.
Macfie, R. A., Esq.
Machinery Market, Editor of.
Mackey, Rev. D. J.
Macmillan and Co., Messrs., London.
Madrid—
Director-General of Public Works.
Geographical Society of.
Inst. of Geography and Statistics.
Magáz y Jayme, Exmo Señor D. José, Madrid.
Manchester—
Literary and Philosophical Soc.
Statistical Society of.
Manitoba, Dept. of Agriculture, &c.
Martin, John Biddulph, Esq., M.A.
Massachusetts, Board of Health, Lunacy, and Charity.
„ Bureau of Statistics of Labor.
Mauritius Almanac, &c., Editor of.
„ The Colonial Secretary.
Mechanical Engineers, Institution of
Michigan State Board of Health.
Middlesex Hospital.
Minnesota, The Commissioner of Statistics.
Minot, M. Eugène, Paris.
Mitchell Library, Glasgow.
Money, The Editor of.
Mouat, Dr. F. J., F.R.C.S.
Moss and Co., Messrs. R. J.
Mulhall, M. G., Esq.
Murray, Adam, Esq.

Nagai, K., Esq., Japan.
Nature, The Editor of, London.
Nelson and Sons, Messrs. T.
Netherlands—
„ The Director of the Postal Savings Bank.
„ Legation, London.
„ Statistical Society of.
Neumann-Spallart, Dr. F. X. von.
New South Wales, Registrar-General.
„ Agent-Genrl. for.
New Zealand, Registrar-General.
„ Registrar of Friendly Societies.
Newcome, F. N., Esq.
Newmarch, Mrs. E.
Neymarck, Alfred, Esq.
Nicholson, Professor J. S.
Nimmo, Jos., Esq., jun., Washington.
Norway, Central Statistical Bureau of.
„ The Royal University of.

Ommanney, Admiral Sir E., C.B., F.R.S., &c.

Page and Gwyther, Messrs.
Paris, Statistical Bureau of.
„ Statistical Society of.
Parker, W. H., Esq.
Patterson, R. H., Esq.
Peace Society.
Peek, Sir Henry, Bart.
Petersen, Aleksis, Esq., Copenhagen
Pixley and Abell, Messrs.
Platt, James, Esq.
Plowden, W. C., Esq.
Policy-Holder Journal, The Editor of the.
Powell, Messrs. T. J. and T.
Prague, Statistical Bureau of.
Prinsep, C. C., Esq., London.
Prussia, Royal Statistical Bureau of.

Queensland, Registrar-General of.

Rabino, J., Esq., Alexandria.
Rama Varma, H. H., G.C.S.I., The Maharaja of Travancore.
Rawson, Sir R. W., K.C.M.G., C.B.
Redgrave, A., Esq., C.B.
Reims, Bureau of Hygiene.
Review, The Editor of.
Révue Bibliographique Universelle, The Editor of, Paris.

During the Year 1884—*Continued.*

Révue Geographique Internationale, The Editor of, Paris.
Rhode Island, Providence, City Registrar of.
Ronald and Sons, Messrs.
Roth, H. Ling, Esq.
Roumania, Central Statistical Office.
Royal Agricultural Society.
„ Asiatic Society.
„ „ Bombay Branch.
„ College of Surgeons.
„ Colonial Institute.
„ Geographical Society.
„ Institution of Great Britain.
„ Irish Academy.
„ Med. and Chirurgical Society.
„ National Life Boat Inst.
„ Society.
„ United Service Institution.
Russia, Department of Agriculture.
„ Imp. Geographical Society.
„ The Land Administration of the Government of Tschernigoff.

St. Bartholomew's Hospital, London.
Samelson, A., Esq.
Sanitary Record, The Editor of.
Saxony, Royal Statistical Bureau.
Scandinavia, The Editor of.
Scott-Moncrieff, Colonel, C.S.I.
Shaw, Capt. E. M., C.B., London.
Simson, James, Esq., U.S.A.
Smith, George, Esq., LL.D.
Smithsonian Institution, U. S. A.
Snow, Dr. E. M., U.S.A.
Social Science Association.
Solomon, The Hon. M., Jamaica.
South Australia, Chief Secretary of.
„ Royal Society of.
South Australian Institute.
Spratt, Vice-Admiral, T. A. B.
Statist, The Editor of.
Statistical and Social Inquiry Society of Ireland.
Strachan, T. Y., Esq.
Surveyors, The Institution of.
Sweden, Central Statistical Bureau.
Sweeting, R. D. R., Esq., M.R.C.S.
Switzerland, Statistical Bureau.

Tasmania, The Government Statist.
„ The Registrar-General of
„ Royal Society of.
Teller, Hon. H. M., U.S.A.
Textile Manufacturer, Editor of.
Thompson, Messrs. W. J. and H.
Thubron, R., Esq.
Trübner and Co., Messrs., London.
Tupper, Sir Charles, K.C.M.G.

University College, London.
Urmson, Elliott, and Co., Messrs.
Uruguay, The Consul-General for.

Van den Berg, N. P., Esq.
Van Nierop, A. H., Esq.
Vessélovsky, A., Esq., St. Petersburg.
Victoria, Royal Society of.
Vincent, Edgar, Esq., Cairo.

Walford, Cornelius, Esq.
Walker, Alexander, Esq.
Walton, W. G., Esq.
Wandsworth Board of Works.
Wells, The Hon. David A., U. S. A.
Westergaard, H., Copenhagen.
White, Edmund, Esq.
Wolff, M. P., Esq.
Wool and Textile Fabrics, The Editor of.
Wool Brokers' Association.
Woolston and Beeton, Messrs.
Wright, Hon. C. D., Boston, Mass.

Zogheb, Vicomte Antoine, Egypt.

STATISTICAL SOCIETY'S LIBRARY.

The following is a List of some of the Odd Numbers, Parts, and Volumes, of Works wanting in the Library. They are arranged alphabetically under the following heads:—(a) *Foreign Countries;* (b) *India, Colonial, and other Possessions;* (c) *United Kingdom and its several Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.;* (f) *Periodicals, &c.*

Donations of any portion thereof will be acceptable, and will be duly acknowledged by the Society.

[The Dates and Numbers are in all cases inclusive.]

(a) Foreign Countries.

Belgium—

Annuaire Statistique de la Belgique. 1er an (1870).
„ de l'Observatoire de Bruxelles. 1833-54, 1856-64, 1874, *et seq.*
Observations de la Cour des Comptes. Part for 1832.
Bulletin de la Commission Centrale de Statistique. Vols. v—viii.
Documents Statistiques, &c. Tome xiv (1870), *et seq.*
Statistique Générale de la Belgique. Exposé de la Situation du Royaume. 1831-40; 1841-50.
Bulletin Hebdomadaire de Statistique Démographique et Medicale de la Ville de Bruxelles. (For the first ten years, 1870-79.)
Ville de Bruxelles, Annuaire Démographique et Tableaux Statistiques des causes de décès. Par le Docteur E. Janssens. 8vo. Bruxelles. Nos. 1, 10, 12, and 14.
Académie Royale des Sciences et Belles Lettres de Bruxelles—
Nouveaux Mémoires. Vols. i—ix.
Mémoires Couronnés, &c. Vols. i—xi.

Egypte. Guide Annuaire d'—. Par M. François Levernay. (Any numbers before 1872-73, and for 1873-74, *et seq.*)

France—

Abolition de l'Esclavage dans les Colonies anglaises. Vols. i et ii (1840-41).
Annuaire du Bureau des Longitudes. 1795-1813, 1815-17, 1828, 1833-34, 1837-40, 1843, 1845-68, 1871, 1874-77, 1880, *et seq.*
Atlas Graphique et Statistique du Commerce de la France.
„ Statistique de l'Administration des Forêts de la France.
Compte Général de l'Administration de la Justice Civile et Commerciale en France pendant les années 1862, 1872, et 1873.
Compte Général de l'Administration de la Justice Crimineile en France pendant les années 1862, 1872, et 1873.
Compte rendu sur le Recrutement de l'armée pendant les années 1867, *et seq.*
Enquête sur les Principes et les Faits Généraux qui régissent la Circulation Monétaire et Fiduciaire. Paris, 1867. Vol. vi.
Exposé de la situation de l'Empire, présenté au Sénat et au Corps Legislatif. 1868.
Statistique de la France. Deuxième série. Statistique Agricole. 1858-59. 2 vols. L'Introduction, et 1er Partie.

France—*Contd.*

Tableaux Généraux du Commerce de la France, &c., pendant les années 1846, 1847, 1850, et 1868 à 1876.

Journal des Economistes—

1e Serie, the first twenty-one volumes (1842-48).

2e Serie. The number for July, 1859, of vol. xxiii.

Tables triennales comprenant les dix-huitième années de 1866 à 1883.

Almanach de Paris for 1866, 1867, 1869, *et seq.*

Annuaire de l'Economie Politique et de la Statistique (Block et Guillaumin). The first twelve volumes (1844-55) and for 1866, 1870, and 1874.

Bordeaux. Académie des Sciences, &c. Vol. v, part 4; vols. vi—viii, xii; vol. xiii, parts 2, 3, and 4; vol. xvi, part 4, *et seq.*

Revue Geographique Internationale. Nos. 1—22, 26, 50, 52—54, 56, 57, 63, 64, 84, 85, and 86, and maps to Nos.47 and 55.

L'Economiste Français—

Vol. i, 1873, Table Analytique Général des Matières.

No. 35 (1 Sept., 1877).

No. 30 (26 Juillet, 1879) et No. 31 (2 Août, 1879).

Marseilles. Société de Statistique de—. Répertoire des Travaux. 8vo. Eighteen volumes, from 1840 to 1858.

Société Internationale des Études pratiques d'Economie Sociale. Les Ouvriers des Deux Mondes. Vol. ii. Paris, 1857.

Germany. (Official Publications)—

Statistik des Deutschen Reichs. Band xiv, Vierteljahrshefte für 1875. (3 Jahrgang.) Heft 2, Abth. 2.

Baden. Beiträge zur Statistik der inneren Verwaltung des Grossherzogthums Baden. 8, 9 (1tes Heft), 17—21, 23, 24, 30.

Frankfort—

Jahresbericht des Frankfurter Vereins für Geographie und Statistik. 1858-70, 1873, *et seq.*

Jahresbericht für Handelskammer zu Frankfurt. 1872 *et seq.*

„ über die Verwaltung des Medicinalwesens. ii—vi (1858-62), x—xi (1866-67).

Statistische Mittheilungen über den Civilstand der Stadt Frankfurt. i Band 1—4 Hefte, ii Band 2 Heft.

Mecklenburg-Schwerin. Beitrage zur Statistik Mecklenburgs. Vom Grossherzoglichen Statistischen Bureau zu Schwerin. 1860-74, 1877, *et seq.*

Oldenburg. Statistische Nachrichten über das Grossherzogthum Oldenburg, herausgegeben vom Statistischen Bureau. Hefte 1—4, 8—11, 14, *et seq.*

Prussia. Preussische Statistik. Heft 58.

Saxony—

Kalender und Statistisches Jahrbuch . . . Sachsen, 1873.

Mittheilungen des Statistischen Vereins für das Kong. Sachsen. Nos. 1—5, 7, 10, 15, 16, 19, *et seq.*

Zeitschrift des k. sächsischen statistischen Bureaus. xix, Nos. 1—6, 10—12; xx, Nos. 1—3.

Wurtemberg. Wurttembergische Jahrbücher für Statistik und Landeskunde. Jahrgang 1876, Heft 2. Jahrgang 1877, Hefte 3—5.

Germany—*Contd.*

Almanach de Gotha. The first ninety-six volumes.

Rechenschaftsbericht der Lebensversicherungsbank für Deutschland in Gotha. 1829-47, 1849, 1852, 1859, 1861, 1864, 1866, und 1870.

Italy—

Annuario di Statistica Italiano. Vols. for 1879 and 1880.

Popolazione Introduzione Storico sopra i Censimento delle Popolazioni Italiane dai tempi antichi sino all' anno 1860. Fascicolo 1°. 4to.

Giornale della Societa Italiana d'Igiene. An II°, Nos. 1 e 2.

Rivista Europea, Rivista Internazionale. (N.S.) Vols. i—iii.

Netherlands. Staatkundig en Staathuishoudkundig Jaarboekje voor 1849. (First year.) Statistiek in Nederland.

Portugal. Boletim da Sociedade de Geographia de Lisboa:—
1ª Serie, Nos. 1, 2, 5, *et seq.* 2ª Serie, the numbers for 1882.

Russia—

Annuaire des Finances Russes. 1ª, 2ª, 7ª, et 10ª années.

Russian Geographical Society, Proceedings of the—. Report for 1877, and Literature of Anthropology, Ethnography, and Science from the earliest times to 1876. By V. Koper. Sheets 3 and 4 of vol. xiv, 1878, and Report for 1878, Part 5 of vol. xv, 1879.

Spain. Boletin de la Sociedad geográfica de Madrid. Vol. ix, Nos. 1 y 2; x, No. 1.

Switzerland—

Journal de Statistique Suisse, for the first six years, 1865-70, and Part 2 of 1872; Part 4 of 1875; Part 4 of 1877; Part 4 of 1878; Parts 1 and 2 of 1879; Parts 2, 3, and 4 of 1880; Parts 1, 2, 3, and 4 of 1881, *et seq.*

Schweizerische Statistik. 1—20, 25—50, 52, *et seq* (1860—).

Manuel statistique de la Suisse. The series.

United States—

Smithsonian Institution. Annual Reports of the Regents. The first three, and for the year 1858.

Academy of Natural Sciences of Philadelphia. Proceedings of the—. Part 1, 1871.

American Almanack, Boston, U.S.A. The volumes previous to 1831, and subsequent to 1861; also volumes for 1847 and 1850.

American Education Society's Quarterly Register, &c. Vols. i and iii.

American Geographical and Statistical Society (altered in 1871 to the *American Geographical Society of New York*)—

— Bulletins. Vol. i, Parts 2—4, *et seq.*; and vol. ii, *et seq.* 8vo. (*Circa* 1853.)

— Reports, previous to 1857, and for 1858 *et seq.* 8vo.

— Journals. Vol. i, No. 4, *et seq.* Sm. 4to. (1859.)

— Proceedings. Vol. i, and Nos. 2 and 5, *et seq.*, of vol. ii (1863.)

— Journal. Vols. i and iii. 8vo. (*Circa* 1869.)

United States—*Contd.*

American Journal of Science and Arts. Vol. i—xxxv; vol. xxxvi, No. 2 (1839); vol. xxxix, No. 1 (1840); vol. xl, No. 2 (1841); vol. xli, No. 1 (1841).

American Philosophical Society. Transactions of the—. Vols. i—ix; vol. xii, Part 1; vol. xiv, Parts 1 and 2; vol. xvi, *et seq.*

American Social Science Association—

Journal, containing the Transactions of the—. Nos. 1 and 4.

Charities. Reports of the Proceedings of the Conferences of—. 1st, 3rd, and 5th.

Bankers' Magazine. New York. The first twenty volumes, comprising the second and third series. Series 3, vol. ii, No. 7 (1868); vol. v, No. 2 (1870); vol. vii, Nos. 5 and 7 (1872), and vol. viii, No. 6 (1873).

Franklin Institute. Journal of the—, First series. The whole. New series, vols. i—xxiv; Third series, vols. lxxv—cxx. No. 6.

Prison Discipline Society. 8vo. Boston. Annual Reports. Nos. 1—23; No. 26 (1851); No. 28, *et seq.*

Minnesota. Old series. First and Second Annual Reports of the Commissioner of Statistics for 1859 and 1860.

— New series. The First Thirteen Annual Reports of the Commissioner of Statistics for 1869-81.

New Jersey. Annual Reports of the Board of Health, 1877-80.

Wisconsin. The History of, in three parts—Historical, Documentary, and Descriptive. Compiled by direction of the Legislature of the State. By William R. Smith. Part 1, vols. ii *et seq.*; Part 2, vols. i, ii, iv, *et seq.*; Part 3, vols. i *et seq.* 8vo.

(b) **India, Colonial, and other Possessions.**

Cape of Good Hope. Port Elizabeth. First sixteen Annual Reports of the Chamber of Commerce of—. 1864-80.

Ceylon Branch of the Royal Asiatic Society. First series, Nos. 4, 6, *et seq.* New series, Part III, *et seq.*

India—

A Manual of the Land Revenue Systems and Land Tenures of British India. By B. H Baden-Powell, of the Bengal Civil Service.

Maritime Trade of—. 1878-79, and previous years.

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